

NAVAL SEA SYSTEMS COMMAND
JOINT FLEET MAINTENANCE MANUAL (JFMM)
VOLUME VII
CHAPTER 4
CONTRACT SPECIFICATION DEVELOPMENT
APPENDIX 4-E
PROCEDURES FOR THE PREPARATION
AND USE OF
WORK ITEMS FOR SHIP REPAIR

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SECTION I

PURPOSE

A. The purpose of this document is to publish mandatory procedures for the preparation, utilization, and invocation of Work Items as directed by NAVSEAINST 9070.1 (Series) for repair and alteration of U.S. Navy ships and craft. This Appendix may be revised periodically at meetings of the Standard Specification for Ship Repair and Alteration Committee (SSRAC) to reflect changes in policy and procedure adopted by the Committee. Revised editions of this Appendix will be available on the SSRAC web site at <http://www.sermc.surfor.navy.mil/SSRAC1/index.htm>

SECTION II

DEFINITIONS

- A. Work Item (4-E Spec) - An individual set of work requirements written in a standard format to accomplish a specific alteration or repair.
- B. Specification (Schedule) - The set of Work Items contained in a Job Order for repair and alteration of vessels.
- C. Specification Package - The Work Items, reference data, and all contractual requirements.
- D. Standard Items - Mandatory and non-deviational.
 - 1. Standard Items (SIs) - Items that establish uniform methods and standards for routine requirements normally invoked in ship repair Work Items. These items are invoked whenever applicable without modification. SIs are approved and maintained by the SSRAC.
 - 2. Local Standard Items (LSIs) - Items that meet the criteria of SIs but are approved on a case basis for local area use only. LSIs shall not be used to modify or replace existing SIs and shall not be used in coast-wide bidding or extended solicitations. LSIs are numbered sequentially in the 099-XX series (i.e., 099-XXSE for a Southeast Regional Maintenance Center LSI). Approval of LSIs will be made at the local level.
- E. Templates - Work Items that can be modified and used for single or multiple ship classes.
 - 1. Standard Work Templates (SWTs) - Work templates that are prepared for specific repairs, alterations, or to provide support for work frequently occurring in ship repair utilized across ship classes.
 - a. User activity may add/delete requirements or may use "Intentionally Left Blank" for non-applicable reference(s) or requirement(s) as shown in Section VII-B.
 - b. User activity shall fill in all blanks or use "Intentionally Left Blank" if non-applicable as shown in Section VII-B.
 - 2. Class Standard Work Templates (CSWTs) - Work templates that are prepared for specific repairs, alterations, or to provide support for work frequently occurring in ship repair utilized on a specific class of ship.

- a. User activity may add/delete requirements or may use "Intentionally Left Blank" for non-applicable reference(s) or requirement(s) as shown in Section VII-B.
 - b. User activity shall fill in all blanks or use "Intentionally Left Blank" if non-applicable as shown in Section VII-B.
- 3. Local Work Templates (LWTs) - Work templates that are prepared to provide instruction or support for work frequently occurring in ship repair that is unique to a specific geographic location.
 - a. User activity may add/delete requirements or may use "Intentionally Left Blank" for non-applicable reference(s) or requirement(s) as shown in Section VII-B.
 - b. User activity shall fill in all blanks or use "Intentionally Left Blank" if non-applicable as shown in Section VII-B.
- F. The Master Specification Catalog Maintenance Office (MSCMO) is responsible for approving and maintaining CSWTs and SWTs (except for SWT 077-001, Hazardous Waste Produced on Naval Vessels; control, and 992-031, Cleaning and Pumping; accomplish, which are designated as SSRAC responsible). LWTs are approved and maintained at the local level.
- G. *SWTs 077-001, Hazardous Waste Produced on Naval Vessels; control, and 992-031, Cleaning and Pumping; accomplish, are approved and maintained by SSRAC.*
 - 1. *SWT 077-001 is non-deviational and mandatory for use in the preparation of Hazardous Waste Work Items. User activity shall fill in applicable blanks only.*
 - 2. *SWT 992-031 is mandatory for use in the preparation of Cleaning and Pumping Work Items.*
 - a. *User activity may add/delete requirements or may use "Intentionally Left Blank" for non-applicable reference(s) or requirement(s) as shown in Section VII-B.*
 - b. *User activity shall fill in all blanks or use "Intentionally Left Blank" if non-applicable as shown in Section VII-B.*

SECTION III

PROGRAM OBJECTIVES

A. In order to reduce the Total Ownership Costs (TOC) of preparing specifications, while maintaining quality standards and enabling execution savings through standardization, a program is necessary that will:

1. Make specification preparation less time consuming and aid the planner or surveyor in Work Item preparation.
2. Form the basis for a uniform training program for new personnel.
3. Improve the overall quality of Work Items to enhance understanding of requirements and to reduce the cost of work.
4. Present a uniform policy for ship repair nationwide.
5. Provide definite Quality Assurance (QA) requirements to ensure quality and reduce the surveillance burden of inspection personnel.
6. Allow temporary detail of personnel to another activity in peak workload periods without significant retraining.
7. Provide the necessary degree of standardization required to input and retrieve data via automated data processing centers.

B. NAVSEA directed that a committee of key personnel from the various user activities be formed to establish standardization policy and to prepare procedures for specification preparation, and to develop high quality Work Items for certain recurring repairs. This committee, Standard Specification for Ship Repair and Alteration Committee (SSRAC), was established by NAVSEAINST 9070.1 (Series). These standardized items and Work Items:

1. Are technically correct, contractually enforceable, and of sufficient scope to be of use at various activities for a broad range of requirements.
2. Are as self-contained as feasible to allow invocation at each activity without reference to numerous additional documents.
3. Avoid the use of instructions, work practices, or terminology not common to all activities.
4. Use the same format and phraseology.

C. Each activity shall aggressively pursue this mandatory program and shall routinely provide suggested revisions and modifications to the SSRAC where use has proven these changes necessary or advisable. SSRAC meetings are scheduled annually. Agenda items to be considered by the SSRAC shall be proposed by interested activities 4 months prior to the scheduled meeting. The nominating

activity shall forward proposed changes/additions to the SSRAC for consideration 60 days prior to the scheduled meeting ***utilizing the proposal form provided by the SSRAC.***

D. SSRAC products are available for viewing or downloading on the Worldwide Web at <http://www.sermc.surfor.navy.mil/SSRAC1/index.htm>.

SECTION IV

STANDARDIZED ITEMS AND WORK ITEMS

A. The specification standardization concept is used to promote a program to promulgate and utilize the best procedures to be employed in developing Work Items as defined below:

1. Standard Items (SIs) are items that establish uniform methods and standards for routine requirements normally invoked in ship repair Work Items. These items are invoked whenever applicable without modification.

a. There are 2 categories of SIs from the standpoint of utilization. A Category I SI, when invoked, is applicable to the entire Job Order without further reference in the individual Work Item. A Category II SI, when applicable, shall be invoked in each Work Item.

(1) A Standard Item may be assigned as Category I by the SSRAC if its requirements are either (a) safety (personnel or equipment) or environmental related, (b) administrative or managerial (non-trade) in nature, or (c) readily discernible, by shipcheck or listed references, based on the scope of repairs specified in a Work Item. A SI may be assigned as Category I by the SSRAC if it is applicable to only a unique class of ship or location of work and it meets the safety or administrative criteria above. Category I Standard Items shall stand alone and require no utilization guidance or phraseology. The official source for Standard Items is the SSRAC web site at <http://www.sermc.surfor.navy.mil/ssrac1/index.htm>.

2. Local Standard Items (LSIs) are items that meet the criteria of SIs but are approved on a case basis for local area use only. LSIs shall not be used in coast-wide bidding or extended solicitations. LSIs are numbered sequentially in the 099-XXXX series (i.e., 099-XXSE for a Southeast Regional Maintenance Center LSI). Approval of LSIs will be made at the local level.

B. Changes or additions to SIs are identified by showing added or changed verbiage in bold Italics. Deletions to SIs are identified by a vertical line in the right-hand margin beside the deletion. New or completely revised SIs are identified by a vertical line in the right-hand margin beside the ITEM NO, DATE, and CATEGORY lines. New or completely revised SIs are indicated by a vertical line in the right margin of the header, e.g.:

ITEM NO:	<u>009-01</u>	
DATE:	<u>01 AUG 2008</u>	
CATEGORY:	<u>I</u>	

C. SIs and invoking phraseology (Section A of Annex B) developed at the SSRAC meeting shall be invoked in all new procurements issued after receipt from the SSRAC Chairman, provided that the receipt of the SIs supports the planning timetable for use.

D. Newly developed or revised Standard Phraseology (Sections B-G of Annex B) shall be utilized upon receipt.

E. Annex A contains an invoking guide for Category I Standard Items. This Annex shall be updated after each SSRAC meeting and shall be published with the results of the meeting and copies of the Standard Items and new or revised Standard Work Templates.

F. Annex B is a comprehensive listing of approved NAVSEA Standard Phraseology and is provided with notes and usage guidance for preparation of Work Items where a standard phrase is appropriate to describe the work requirement. Additions, deletions, or modifications to Annex B will be made by the SSRAC and a new Annex B will be published after each SSRAC meeting. Other changes deemed necessary by the SSRAC Chairman will be promulgated by correspondence for later incorporation into Annex B. Issues relative to the interpretation of standard phrases will be forwarded to the Chairman of the SSRAC with supporting documentation and recommendations for review prior to effecting contract modifications at the local level. Changes required by such a review will be promulgated by the SSRAC Chairman.

G. Annex C, which is designated "For Official Use Only", contains a list of the Category I SI's, the direct labor charges, and a rule-of-thumb estimating guide for each item.

H. Utilization of Standard Phraseology for invoking Category II Standard Items (Section A of Annex B) is mandatory. Standard Phraseology in Sections B through G of Annex B shall be utilized when applicable.

I. Planner's Notes should be used to explain "fill in the blank" information on SWTs, CSWTs and LWTs. ***Planner's Notes may also be used to provide other types of information that may be of value to the Planner, for example:***

When accomplishing generator repairs, separate Work Item shall be invoked using 311-022 template to accomplish testing.

Verify and update drawings and revisions.

SECTION V

WORK ITEM PHILOSOPHY

A. Work Items are technical documents that convert work requirements to clear, concise, well-defined, and contractually sound terms. Each becomes a legally binding contractual document that is the determining factor as to what the Government will receive from the contractor accomplishing the work. Each must provide sufficient information to the contractor to define precisely the minimum requirements of the Government and be free of language open to diverse interpretations.

B. Work Items normally describe what to do rather than how to accomplish the work. There are instances where the Government desires that the work must be accomplished in a specific manner. In these instances the procedures must be clearly defined, but should not be so worded that they unreasonably restrict competition.

C. Work Items must be written in a logical sequence of work operation whenever possible (i.e., remove, disassemble, inspect, report, repair, assemble, install, and test).

D. Each Work Item must clearly define the work requirements and be as self-contained as possible to enable the user to understand the requirements without having to research a myriad of reference data. The Work Item requirements must include the minimum specific tests and inspections that must be accomplished by the contractor to ensure that the desired quality is achieved.

E. Work Items should be limited to the requirements necessary to achieve the desired result and should not upgrade equipment and installations to exceed original design requirements without approval of the customer. Work Items shall not alter the military characteristics of any ship or in any other manner require repairs or modifications to equipment or systems that would normally be considered to be under the purview of the Fleet Modernization Program (A and K ALTS) or Type Commander Alterations Equivalent to a Repair (AER - D and F ALTS) without prior approval of NAVSEA.

SECTION VI

FORMAT

A. The following format shall be utilized in the preparation of SIs and LSIs:

NAVSEA or SUPSHIP _____ or _____ REGIONAL MAINTENANCE CENTER **or NORFOLK SHIP SUPPORT**
ACTIVITY
STANDARD ITEM or LOCAL STANDARD ITEM

FY-_____

ITEM NO: _____

DATE: _____

CATEGORY: _____

1. SCOPE:

1.1 Title: (When the length of a title continues past one line, the beginning of the subsequent lines will be indented to the first character of the first line, as demonstrated here.)

2. REFERENCES:

2.1 (Standard Items shall be listed first, if referenced in the Item.)

2.2 (When the length of a reference continues past one line, the beginning of the subsequent lines will be indented the same as the first line, as demonstrated here.)

3. REQUIREMENTS:

3.1

3.2

3.2.1

3.2.1.1

4. NOTES:

4.1 None. *

* In the event there are no NOTES, the word None shall appear in 4.1.

of

ITEM NO: _____
FY-__

B. The following format shall be used in the preparation of Work Items and templates:

SHIP: _____	ITEM NO: _____
COAR: _____ (Delete line if not required)	PCN: _____
* _____ FILE NO: (IF APPLICABLE) (*SWT, CSWT, or LWT as applicable)	CMP: (IF APPLICABLE)
REVISED: (IF APPLICABLE)	PLANNER: _____

1. SCOPE:

1.1 Title: (When the length of a title continues past one line, the beginning of the subsequent lines will be indented to the first character of the first line, as demonstrated here.)

1.2 Location of Work:

1.2.1 (If only one, use 1.2.1 or Not Applicable)

1.2.2 (When the length continues past one line, the beginning of the subsequent lines will be indented to the first character of the first line, as demonstrated here.)

1.3 Identification:

1.3.1 Quantity (), (If only one, use 1.3.1 or Not Applicable)

1.3.2 (When the length continues past one line, the beginning of the subsequent lines will be indented to the first character of the first line, as demonstrated here.)

1.4 Security Classification of Equipment, Components, Spaces and Documents:
The Equipment, Space or Document is classified and subject to the applicable provisions of the National Industrial Security Program Operating Manual, DOD 5220.22M (0584-LP-179-6400). (Omit when not applicable)

1.4.1 Spaces: (Omit when not applicable) (When the length continues past one line, the beginning of the subsequent lines will be indented to the first character of the first line, as demonstrated here.)

of # ITEM NO: _____

SHIP: _____

1.4.2 Equipment: (Omit when not applicable) (When the length continues past one line, the beginning of the subsequent lines will be indented to the first character of the first line, as demonstrated here.)

1.4.3 Documents: (Omit when not applicable) (When the length continues past one line, the beginning of the subsequent lines will be indented to the first character of the first line, as demonstrated here.)

2. REFERENCES:

2.1 (Standard Items shall be listed first, if referenced in the item)

2.2 (When the length of a reference title continues past one line, the beginning of subsequent lines will be indented the same as the first line, as demonstrated here.)

3. REQUIREMENTS:

3.1

3.1.1

3.2

3.2.1

3.2.1.1

3.2.2

3.3

The following format shall be used to identify repair parts in paragraph 3 (use Standard Phrase B30).

TOTAL					
QUANTITY	NAME	PIECE	REF.	FIGURE	PART
<u>REQUIRED</u>	<u>OF PART</u>	<u>NO.</u>	<u>NO.</u>	<u>DRAWING NO.</u>	<u>NO.</u>

of

ITEM NO: _____

SHIP: _____

4. NOTES:

4.1 None. *

4.1.1

4.2

* In the event there are no NOTES, the word None shall appear in 4.1.

5. GOVERNMENT FURNISHED MATERIAL (GFM):

5.1 LLTM:

5.1.1 None.** ***

5.2 PUSH MATERIAL:

5.2.1 None.** ***

5.3 KITTED MATERIAL:

5.3.1 None.** ***

** In the event there is no GFM, the word None shall appear.

*** In the event there is GFM, the following format shall be used in 5.

5.1 LLTM:

TOTAL QUANTITY <u>PROVIDED</u>	NAME <u>OF PART</u>	PIECE <u>NO.</u>	REF. <u>NO.</u>	NATIONAL <u>STOCK NO.</u>	PARA <u>NO.</u>
--------------------------------------	------------------------	---------------------	--------------------	------------------------------	--------------------

5.1.1

5.2 PUSH MATERIAL:

TOTAL QUANTITY <u>PROVIDED</u>	NAME <u>OF PART</u>	PIECE <u>NO.</u>	REF. <u>NO.</u>	NATIONAL <u>STOCK NO.</u>	PARA <u>NO.</u>
--------------------------------------	------------------------	---------------------	--------------------	------------------------------	--------------------

5.2.1

of

ITEM NO: _____

SHIP: _____

5.3 KITTED MATERIAL:

TOTAL QUANTITY <u>PROVIDED</u>	NAME <u>OF PART</u>	PIECE <u>NO.</u>	REF. <u>NO.</u>	NATIONAL <u>STOCK NO.</u>	PARA <u>NO.</u>
--------------------------------------	------------------------	---------------------	--------------------	------------------------------	--------------------

5.3.1

NOTE: PARA NO. -- Identify what basic paragraph in body of Work Item requires the part/material.

of

ITEM NO: _____

C. SIs, LSIs, templates, and locally prepared Work Items shall be prepared in a 12 character per inch (CPI) font, with a left, right, top, and bottom margin of one inch.

NOTE: FORMAT TO SUPPORT THE AUTOMATED INFORMATION SYSTEM UNDER ONGOING REVIEW

SECTION VII

INSTRUCTIONS FOR PREPARATION AND UTILIZATION OF WORK ITEMS

A. WRITING STANDARD ITEMS AND LOCAL STANDARD ITEMS:

1. The heading of each SI or LSI shall be in accordance with Section VI.A. The FY, ITEM NO., DATE, and CATEGORY shall be assigned to each SI by the SSRAC, or by the SUPSHIP or REGIONAL MAINTENANCE CENTER **or NORFOLK SHIP SUPPORT ACTIVITY** as applicable for LSIs. The date shall be the date of issue of an SI or LSI when changed or reviewed (even when no change was made). The FY shall be changed to show the fiscal year of use. This will always determine the latest version of the particular SI or LSI.

2. The remainder of SIs and LSIs shall follow the criteria of Section VII.B.2.a and B.3 through B.5, except SUPSHIP/RMC/**NSSA** references are not to be used for SIs.

B. WRITING WORK ITEMS AND TEMPLATES:

1. The heading portion of SWTs, CSWTs, LWTs, and Work Items shall be completed as follows, using capitalization throughout:

a. SHIP - Name and hull number of ship or number of each boat or craft.

b. COAR - Customer Order Acceptance Record (COAR) is a locally assigned 5-digit number. The first 2 digits identify the funding category. The last 3 digits are the same as the specification package number and reflect the Availability Identification Number of the ship, boat or craft.

c. FILE NO - The SWT, CSWT, or LWT file number if applicable.

d. REVISED - Day, abbreviated month, and year (DD MMM YYYY) of either original issuance date or revision date, for example 06 APR 1995 (applies to templates only).

e. ITEM NO - The item number shall be assigned in accordance with Section VII C.

f. PCN - The Project Control Number, or PCN, is the identifying number of the applicable work authorization document. This can be the SWLIN number and the applicable line item(s), number(s), the job control number(s) (JCN) from the OPNAV 4790/2K form, Ship's Maintenance Action Form (SMAF), or a number which will identify the source from which the authorized work requirements are being written. Do not resolve space limitations by inserting PCN data in any Work Item paragraph.

g. CMP - The Class Maintenance Plan is the identifying number assigned to the maintenance action, which the Work Item accomplishes. The first 3 digits of the CMP generally follow the ESWBS numbering system.

h. PLANNER - Last name of each person contributing to the preparation of the Work Item.

2. Paragraph 1 shall be SCOPE. The SCOPE paragraph shall be completed as follows:

a. Subparagraph 1.1 - The word "Title" shall appear first, followed by a colon. A brief title will then follow in noun, verb order. Give a brief description of equipment using common shipboard terminology, followed by a semicolon, and work to be done. Title shall be singular. The completion of this paragraph is mandatory. Examples are as follows:

REPAIR TITLES:

Main Feed Pump; repair
Surface Search Radar; install
Bake Oven; repair
Dry Cleaning Plant; repair (OPTION ITEM)

SHIP ALTERATION TITLES:

ShipAlt CG47-00123K, Title; accomplish
ShipAlt DD963-00456K, Title; accomplish
ShipAlt DDG993-00789K, Title; accomplish

ALTERATION EQUIVALENT TO REPAIR (AER) TITLES:

CG47 Class AER 123, Title; accomplish
DD963 Class AER 456 (01/97), Title; accomplish
DDG993 Class AER 789 (02/97), Title; accomplish

b. Subparagraph 1.2 - The words "Location of Work" followed by a colon shall appear first.

(1) Subparagraph 1.2.1 - A compartment designation shall be listed when applicable. Appropriate deck and frame designations shall also be used. Examples are as follows:

Forward Engine Room (B-1-E)
Main Deck, Frame 115
Auxiliary Machinery Room No. One (5-67-O-E)
Communications Center (02-73-O-C)
JP-5 Pump Room (5-132-O-E)

Where several locations are involved, each will be listed in a separate subparagraph. Care must be exercised in the description of the Location of Work, as this, too, is a critical part of the contract, which frequently is the only basis for determining the applicability of the work requirements. The phrase "Throughout the Ship" shall be used to avoid inadvertent omissions for work requirements that are in fact widely dispersed. This phrase, however, shall not be used when a concise and explicit location can be readily

identified. The security classification of the spaces shall only be listed in subparagraph 1.4. If this paragraph is not utilized, indicate such by inserting the words "Not Applicable" after subparagraph 1.2.1. Examples are as follows:

Throughout the Ship
Not Applicable

c. Subparagraph 1.3 - The word "Identification" followed by a colon shall appear first.

(1) Subparagraph 1.3.1 - Describe existing equipment to be worked on, to be permanently removed, or to be removed and replaced. Equipment is defined as, "all non-expendable items needed to outfit/equip an individual or organization, i.e., a ship" (see JOINT PUB 1-02, Department of Defense Dictionary of Military and Associated Terms dated 12 April 2001). If existing equipment can be identified by manufacturer, model, serial number, APL number, or equipment designation, i.e., AN/SPS-10E, and serial number, then it shall be listed. If existing equipment to be identified does not lend itself to number identification then describe the item to be worked or replaced, e.g., Lifeline Stanchions, Firemain Piping, etc. Insert the word "Quantity" followed by the appropriate number and 2-letter abbreviation of unit of issue (e.g., EA, PC, BX, KT, FT, **SF**, etc.) in parentheses preceding the equipment or item identification, i.e., Quantity (10 EA), Quantity (25 FT) or Quantity (25 SQFT), etc. If this paragraph is not utilized, indicate such by inserting the words "Not Applicable" after subparagraph 1.3.1. Examples are as follows:

Quantity (One EA), Liner, IC/E46-6, Part No. 50857-501
Quantity (One EA), Propeller, Right-Hand, Mfr: Bird-Johnson Co., APL
834010072

d. Subparagraph 1.4 - Shall be used only when access to classified spaces, equipment, or documents is required. The security classification of the space, equipment, or document shall be shown parenthetically in upper case letters, following its unclassified title. For spaces, appropriate deck and frame designations shall also be used. For example:

1.4.1 Spaces:

1.4.1.1 Sonar Control Room (01-140-O-C) (CONFIDENTIAL)

1.4.1.2 CIC (01-158-O-C) (CONFIDENTIAL)

1.4.2 Equipment:

1.4.2.1 XXX (CONFIDENTIAL)

1.4.3 Documents:

1.4.3.1 XXX (CONFIDENTIAL)

3. Paragraph 2 shall be REFERENCES.

a. The indiscriminate use of references in Work Items serves only to confuse the users, makes the actual work requirements vague, and does not promote the concept of providing clear and contractually sound Work Items. Conversely, the omission of required reference data does not promote this concept either. Therefore, references must be used when required, but they should always be thoroughly researched and then used selectively. Ideally, what is desired is a Work Item which includes no textual references and which contains all necessary data; a Work Item that stands alone.

b. The General Specifications for Overhaul of Surface Ships (GSO) is a primary source for technical requirements for alterations and for the refurbishment and repair of existing ship's equipment and components; therefore, it shall be considered when preparing Work Items.

c. The following general rules apply for references:

(1) With the exception of Category II Standard Items which, when invoked in paragraph 3 REQUIREMENTS, are always 2.1, list applicable references in paragraph 2 in the order in which they appear in the body of the Work Item. Do not list references that are not referred to in the body of the Work Item.

(2) In the event that there are no references, the word "None." is to follow 2.1.

(3) Basic Government specifications, standards, or NAVSEA Standard Plans shall be referenced without prefix zeros or suffix letters or numbers which identify revisions or amendments, i.e., MIL-STD-XXX, followed by the title. For example:

MIL-STD-777, Schedule of Piping, Valves, Fittings, and Associated Piping Components for Naval Surface Ships

(a) Drawings which are not NAVSEA Standard Plans shall be identified by group number, drawing number, revision letter (A, B, C, etc.) only if applicable (do not use Rev Ø, or Rev __), and title as it appears in the drawing title block, with the exception of capitalization. Capitalize the first letter of each word. For example:

252-5351151 Rev L, Propulsion Control System, Circuit K-GT, Cabling Diagram

(b) Revision numbers and/or revision date of these types of references shall not be included when preparing Standard Items (SIs).

(4) References shall be limited to applicable technical data such as Standard Items, drawings, equipment technical manuals, Military Standards (MIL-STDs), Test Memos, and NAVSEA approved Preservation Process Instructions (PPIs).

(a) Titles for all references shall be as they appear on the reference with the exception of capitalization. Capitalize the first letter of each word, with the exception of minor words or conjunctions (the, of, etc.). For example:

NAVMED P-5010-6, Manual of Naval Preventive Medicine, Chapter 6, Water Supply Afloat

(b) In the event a reference has been deleted after a Work Item has been developed, the planner may use the following format:

2.____ Intentionally Left Blank

(c) Reference format for 4720 Material Summaries shall be as the File No. and title appears on the 4720 cover sheet. Reference format for Design Memos, Planning Memos, and Test Procedures shall be as follows:

DM 10-09, **NSSA**, Title
DM 97-07 Rev C, SWRMC, Title
PM 390-51, SERMC, Title
PM 230-01 Rev B, SPAS, Title
24310-7-020, Title of Test Procedure/Test
24510-5-001 Rev B, Title of Test Procedure/Test

(d) For references available on compact disk, insert the source CD volume number in parentheses after the title. For example:

SE000-01-IMB-010, Navy Installation and Maintenance Book (NIMB), Section VI, Electronics Installation and Maintenance Book - General Maintenance (Source CD: N0002400003)

(5) Instructions, Notices, and letters shall not be included as references.

(6) Documents such as federal regulations outside the Department of Defense and public laws shall not be referenced except where it is necessary to show the contractor that there are public laws and regulations with which he must comply but are outside the scope of the MSR agreement and the requirements of that particular Work Item.

(7) When using Naval Ship's Technical Manuals (NSTM) and GSO as references, ensure that only applicable portions are referenced. For example:

2.____ S9AA0-AB-GOS/010/GSO, General Specifications for Overhaul of Surface Ships (GSO)

3.____ Remove existing and install new flanged take down joint assembly in accordance with Section 506d of 2.____.

2.____ S9086-T8-STM-010/CH-593, Pollution Control

3.____ Accomplish sanitary and hygienic procedures of Paragraph 593-4.2.3 through 593-4.2.4.1.3 of 2.____.

(8) PMS-400 approved 4720/3 Material Identification Documents for ShipAlts, AERs, or repair kits may be listed in paragraph 2 as a reference. The reference shall be used to identify the GFM for the identified ShipAlt, AER, or repair process in paragraph 5 of the Work Item. (See Section VII, B.3.c.)

d. If short enough, the reference material shall be lifted out or paraphrased and written in the body of the Work Item, both for clarity of the requirements and for building a Work Item that can stand alone.

e. In considering data for use as a reference, data shall be thoroughly researched to determine that:

(1) It will not begin a chain of unnecessary references.

(2) If restricted for use, that written authorization is obtained prior to using proprietary clauses.

(3) It is the latest version or revision of the subject data.

(4) It is available in reproducible form for distribution.

(5) It is absolutely essential to accomplish the required work.

f. The security classification of a classified reference shall be shown parenthetically in upper case letters, following its unclassified title.

g. The method for using SIs and LSIs as references is to list in paragraph 2 REFERENCES, as follows:

(1) SIs or LSIs, regardless of the number that are used as references in a particular Work Item, are invoked by listing as "Standard Items" in paragraph 2.1, and specifying the particular SI or LSI number in paragraph 3.

h. MIL-SPECs are not listed in paragraph 2 as references. They shall be included in the REQUIREMENTS paragraph of the Work Item.

i. Care must be exercised when invoking references. Three degrees of contractor compliance may be required and enforced depending on the invoking statement:

(1) When it is desired to direct a contractor to accomplish work strictly in accordance with the reference, the invoking phraseology should be:

(a) "_____ in accordance with 2.____", or

(b) "Accomplish the requirements of 2.____", or

(c) "_____ conforming to 2.____".

(2) When the reference data is only partially applicable, the invoking phraseology should be: "_____ in accordance with 2.____", and then list the exceptions in a subparagraph.

(3) When strict compliance is not required and the reference is only listed for information and guidance, the invoking phraseology should be: "_____, using 2.____ for guidance". However, it can become a catch-all and its use should be held to a minimum.

(4) When a Work Item references Class and Hull specific configuration and Ship Alteration information, planning activity shall validate that reference information (Ship Alteration drawings, LARS, "as built drawings", Test Procedures, etc.) used is correct via the assigned Class Planning Yard.

j. SUPSHIP/RMC/NSSA References. When material to be used as a reference is too complex or lengthy to be lifted out and included in the body of the Work Item and the material is not appropriate to use directly as a reference, then the material shall be lifted out and rephrased as needed to be used as a SUPSHIP/RMC/NSSA Reference.

(1) SUPSHIP/RMC/NSSA References shall be issued with a cover sheet attached to the reference material showing SUPSHIP (City)/RMC/NSSA Reference _____, Rev __, and date issued.

(2) The originating SUPSHIP/RMC/NSSA shall be responsible for maintaining a master file of SUPSHIP/RMC/NSSA References and revised versions. Revisions to SUPSHIP/RMC/NSSA References shall be identified as Rev A, Rev B, etc.

(3) The use of SUPSHIP/RMC/NSSA References shall be limited to those cases where no other recourse exists to adequately specify work requirements in a Work Item. The modified versions of these appendices would be identified as SUPSHIP/RMC/NSSA References. Likewise, certain portions of NSTMs would be identified for use in a Work Item as a SUPSHIP/RMC/NSSA References.

4. Paragraph 3 shall be REQUIREMENTS. The REQUIREMENTS paragraph of the Work Item is that portion which must detail the minimum work and material requirements. Quality assurance requirements are also inserted in this section. Any additional specific tests and reports required must be delineated.

a. Category II SIs shall be invoked to the maximum extent possible when preparing Work Items.

b. The Standard Phraseology of Annex B shall be used in preparing Work Item requirements (see Section IV F).

c. When abbreviations and acronyms are used, the complete phrase should be written out the first time it is used in a Work Item, followed by the abbreviation or acronym in parentheses. After that, the abbreviation or acronym may be used throughout the Work Item. Abbreviations or acronyms commonly used in the naval ship repair industry need not be defined.

d. Subparagraph 3.1 of the REQUIREMENTS shall be used to require the contractor to remove and install interferences for only those systems listed in 3.1 of Category I Standard Item 009-23.

e. Sentence structure of REQUIREMENTS in Work Items shall be verb, noun format, giving for each item the item identification and compliance requirements; i.e., Remove the equipment listed in 1.3.3, using 2.2 for guidance; Install new gaskets and fasteners conforming to Category and Group A-3 of 2.4; or Hydrostatically test the fire main piping system using clean, fresh water at 225 PSIG for a minimum of 30 minutes. Allowable leakage: None.

(1) In paragraph 3, once you have identified the location and equipment listed in 1.2 and 1.3, it is not necessary to repeat that identification throughout the requirements, unless different actions are being accomplished.

f. Repair and overhaul of equipment and systems, as authorized by TYCOM, shall be implemented in the REQUIREMENTS paragraph by a description of the work to be accomplished. The written sequence of work requirements shall normally be in chronological sequence of work accomplishment. Each subparagraph shall express a complete thought in clear, concise language that is contractually sound. Wording that is ambiguous shall not be used. Accept or reject criteria for use by Quality Assurance inspectors must be definitive.

g. For complex Work Items that would be cumbersome and cause confusion if normal chronological work sequence were employed, an alternative trade or component breakdown method may be employed. This method addresses each trade or component's work requirements separately, either in consecutive subparagraphs of the REQUIREMENTS or in several consecutively numbered Work Items. When this method is used, the normal time sequence of work within the trade or component is maintained.

h. The mandatory parts to be replaced shall be listed, including the quantity required, 2-letter abbreviation of unit of issue (e.g., EA, PC, BX, KT, etc.), the manufacturer's part number or plan number and piece number as listed in the equipment technical manual or plan. ***GFM shall be listed in paragraph 5.*** Common shelf item parts to be replaced, i.e., fasteners, gaskets, cotter pins, O-Rings, and seals, shall be identified by noun name in paragraph 3 of the Work Item without further identification as to manufacturer's part number or piece number.

i. In the event a requirement has been deleted after a Work Item has been developed, the planner may use the following format:

3.__ Intentionally Left Blank

j. After a Work Item is issued, any changes implemented in the Work Item resulting from a Request for Contract Change (RCC), Condition Report (CR), Inspection Report (IR), etc., shall be prepared in accordance with Section VII.

k. Inspections and tests that are not already required by Standard Items shall be identified by (I) or (V) symbols inserted in a Work Item to establish a point in the sequence of accomplishment of work, at which time the repair activity shall inspect/verify and document the inspection or test. Inspections and tests requiring Government notification shall be identified by (G) symbols inserted in a Work Item to establish a point in the sequence of accomplishment of work at which time the SUPERVISOR shall be notified to permit observation of the specific inspection or test. The (I) and (V) inspections and (G) notifications are included in the requirements paragraph of the Work Item by inserting the appropriate symbol(s) in parentheses, e.g., (I), followed by the specific inspection/test within quotation marks, e.g., "HYDROSTATIC TEST", in upper case letters at the left margin immediately preceding the paragraph with the inspection/test. For example:

(I)(G) "HYDROSTATIC TEST"

When the inspection requirements [(I) and (V)] or notifications [(G)] are identified in the Standard Item, they shall not be identified again in the Work Item.

(1) Symbols are defined as:

(I) inspections require verification ***and documentation*** by a separate individual, other than the person who has accomplished the work, ***who is*** qualified as an inspector and currently certified where required by the technical documents (e.g., NBPI, NACE, nondestructive testing, electrical cableway inspections, etc.).

(V) inspections require verification by either the qualified tradesperson, trade supervisor, or inspector.

(G) is a symbol inserted in a Work Item to establish a point in the sequence of accomplishment of work at which time the SUPERVISOR shall be notified to permit observation of a specific inspection or test by the Government.

(2) The following criteria shall be used for identification of inspections and tests requiring annotation with (I), (V), or (G) symbols:

- (a) Manufacture, installation, and repair (welding, brazing, machining, or lapping) of Level I fittings or components:
 - Inspections performed for all acceptance testing (e.g., hydrostatic testing, drop tests, seat leakage tests, joint tightness tests) used for certification of work completed (I)(G)

- Inspections performed to verify final torque of pressure boundary parts and fasteners used in Level I components (I)
 - Inspections performed to verify permanent Level I markings at installation/assembly (I)(G)
 - Inspections performed for post-machining/manufacture of any Level I part/component (I)
 - Inspections for ball valve stack heights, valve blue checks, and inspections performed on any sealing surface when work is performed using controlled assembly (I)
 - Inspections performed to verify Level I pressure boundary parts replacement (I)(G)
 - Mechanical measurements used to verify wall thickness of Level I components (I)
 - Cleanliness inspections when required by MIL-STD-1330 (oxygen, nitrogen, and hydrogen systems) (I)(G)
 - Receipt inspection of Level I material (I)
 - Nondestructive Testing VT (I)
 - Nondestructive Testing MT/PT/UT (Final Only) (I)(G)
 - RT Film Interpretation (I)(G)
- (b) Welding/brazing of P-1, P-LT, P-3a piping systems or Class A-F, A-1, A-2, A-3, A-LT, M-1, T-1 welding, and P-2 steam service:
- Inspections performed for all acceptance testing (e.g., hydrostatic testing, drop tests, seat leakage tests, joint tightness tests) used for certification of work completed (I)(G)
 - Mechanical measurements used to verify wall thickness of Level I components (I)
 - Cleanliness inspections when required by MIL-STD-1330 (oxygen, nitrogen, and hydrogen systems) (I)(G)
 - Fit-up inspection of Class P-3a joints on steam piping (I)
 - Nondestructive Testing VT (I)
 - Nondestructive Testing MT/PT/UT (Final Only) (I)(G)
 - RT Film Interpretation (I)(G)

- (c) Welding on ship/craft listed in Attachment A of SI 009-12 hull or structure when required by the fabrication document:
- Inspections performed for all acceptance testing (e.g., hydrostatic testing, drop tests, structural boundary tests) used for certification of work completed (I)(G)
 - Nondestructive Testing VT (I)
 - Nondestructive Testing MT/PT/UT (Final Only) (I)(G)
 - RT Film Interpretation (I)(G)
- (d) Weight handling equipment manufacture and repair:
- Inspections performed for all acceptance testing (e.g., static load testing, drop tests, pull tests, weight tests) used for certification of work completed (I)(G)
 - Nondestructive Testing VT (I)
 - Nondestructive Testing MT/PT (Final Only) (I)(G)
 - Nondestructive Testing UT (Final Only) (I)(G)
 - RT Film Interpretation (I)(G)
- (e) Corrective maintenance within the certified boundaries of cranes (as defined in NSTM 589):
- Inspections performed for all acceptance testing (e.g., static load testing, drop tests, pull tests, weight tests) used for certification of work completed (I)(G)
 - Nondestructive Testing VT (I)
 - Nondestructive Testing MT/PT (I)(G)
 - Nondestructive Testing UT (Final Only) (I)(G)
 - RT Film Interpretation (I)(G)
 - Weight testing to certify or recertify shipboard cranes when repairs are performed. (I)(G)
- (f) Maintenance on aircraft launch and recovery equipment:
- Inspections performed for all acceptance testing (e.g., hydrostatic testing, drop tests, seat leakage tests, joint tightness tests) used for certification of work completed (I)(G)
 - Nondestructive Testing VT (I)
 - Nondestructive Testing MT/PT/UT (Final Only) (I)(G)

- RT Film Interpretation (I)(G)
- (g) Preservation of critical surfaces:
 - Surface preparation, conductivity/chloride tests, and film thickness inspections (including profile, holiday, and stripe coat inspections) of surfaces identified in Standard Item 009-32 (I)(G)
 - Environmental readings (V)
- (h) Preservation of non-critical surfaces:
 - Surface preparation and film thickness inspections (including profile, holiday, and stripe coat inspections) of surfaces not identified as critical in Standard Item 009-32 (I)
 - Environmental readings (V)
- (i) Final testing, final alignment, process control, and work acceptance of mechanical, electrical, and structural work not covered above, and major safety related inspections:
 - Any final test that is used as the verification that all work has been performed satisfactorily (e.g., final hydrostatic tests and final operational test). This does not include final assembly or dimensional verifications (V)(G)
 - All final alignments (I)(G)
 - Any process requiring a Process Control Procedure (PCP) in accordance with Standard Item 009-09, not covered in paragraph 4.i.(1)(c) above (V)(G)
 - Any final work acceptance inspections of compartments and tanks (e.g., tank closures and compartment turnovers) (V)(G)
 - Visual inspection of the installed waterproof membrane (I)(G)
 - Safety inspections prior to entry into tanks, voids, and cofferdams which contain Mogas or other immediately dangerous to life or health (IDLH) atmospheres (I)(G)
- (j) Other inspections or tests:
 - Any inspection/test that is not covered above and reports are not required to be submitted to the Government (V)

(3) When modifications are written to the original Work Items, (I) and (V) inspections and (G) notifications shall be inserted where required.

(4) Where additional Government oversight is deemed necessary by the SUPERVISOR to ensure contract compliance in a specific problem area, a (G) may be added to an inspection or test currently not requiring Government notification in the criteria identified above.

(5) Never use (G) alone; must be preceded by an (I) or (V).

1. Reports - Written reports are necessary in order to record results of inspections, tests, and work accomplished. The planner should keep in mind that reports are costly to generate and to process. Reports should only be required in Work Items when necessary. Do's and don'ts for reports are as follows:

(1) Do require a report for machinery history with condition found readings.

(2) Do require a report when a unique piece of equipment has had many problems.

(3) Do require a report listing unsatisfactory conditions.

(4) Do require machinery closing reports if not recorded on test memos or data sheets.

(5) Don't require a report to track contractor progress on a job.

(6) Don't require a report following a test and/or inspection (except where recorded test data is necessary).

(7) Don't require a report for each piece of equipment. Have the contractor submit a report in matrix format when criteria are the same for each item. (Example: Five motors being overhauled in accordance with Standard Item 009-17.)

(8) Don't require a report just so you will know the item is being worked.

m. Process Control Procedure (**PCP**) requirements shall also appear in the REQUIREMENTS paragraph. Invoking the requirement for the contractor to develop Process Control Procedures shall be minimized to the extent practicable. The requirement shall be invoked only where contractual compliance of the product cannot be ensured by inspections and tests. Reference shall be made to applicable standards or specifications that govern the process to be controlled. Any requirements that should be addressed by the procedure shall be explicitly identified.

n. It is assumed that MSR Agreement Contractors responding to a solicitation do have the necessary competence to ensure satisfactory

completion of the work requirements of the specification. Sole source requirements (technical representatives, vendors, directed subcontractors, etc.) shall not be invoked in any Work Item without sufficient justification to permit a Justification and Approval (J&A).

5. Paragraph 4 of the Work Item shall always be NOTES and shall contain information or explanations that do not lend themselves to inclusion in the REQUIREMENTS. These notes shall not place requirements on the contractor.

SAMPLE NOTES

4.1 This is an LOA item.

4.2 Known source for butterfly valves:

Flow-Technology, Inc.
49 Century St.
Jacksonville, FL 32211
Telephone (904) 721-1968

6. Paragraph 5 shall be GOVERNMENT FURNISHED MATERIAL (GFM). All GFM listed in paragraph 5 shall be installed by the requirements invoked in paragraph 3. ***All GFM listed in paragraph 5 shall be installed by the requirements invoked in paragraph 3. ALWAYS insert invoking paragraph number under the "PARA NO." heading, e.g.:***

<i>TOTAL</i>					
<i>QUANTITY</i>	<i>NAME</i>	<i>PIECE</i>	<i>REF.</i>	<i>NATIONAL</i>	<i>PARA</i>
<i>PROVIDED</i>	<i>OF PART</i>	<i>NO.</i>	<i>NO.</i>	<i>STOCK NO.</i>	<i>NO.</i>
<i>5.2.1</i>	<i>One (EA) Pump</i>		<i>2.</i>		<i>3.??</i>

Major components or equipment with anticipated delivery dates after the commencement of the overhaul shall be noted with estimated delivery dates specified in the Work Items. This includes turnaround items in the Navy Refurbishment Program. Following each line item of GFM, indicate the paragraph number in which the material is required. Material should be made GFM if it is considered likely that the contractor will have difficulty in procuring it from his normal sources in a timely manner. Parts, which are not normally available outside of the Navy Supply System, should be made GFM. If necessary GFM is not available in the Naval Supply System, alternate plans of action will have to be devised.

a. Categories of GFM listed in paragraph 5 are defined as follows:

- (1) LLTM: Material whose delivery date exceeds 30 days.
- (2) PUSH: Alteration material provided by a program or program office.
- (3) KITTED: Alteration material supplied by an outside activity.

b. For activities utilizing the PMS-400 approved 4720/3 as a reference for ShipAlt/AER, or repair kits, the following GFM example is provided:

5.3 KITTED MATERIAL:

TOTAL QUANTITY <u>PROVIDED</u>	NAME <u>OF PART</u>	PIECE <u>NO.</u>	REF. <u>NO.</u>	NATIONAL <u>STOCK NO.</u>	PARA <u>NO.</u>
5.3.1 One KT	Kit for _____		2.____		3.

7. The following types of material should be procured as GFM:

a. Program material reserved for accomplishment of NAVSEA ShipAlts (Fleet Modernization Material).

b. Mandatory replacement material stocked by the Navy to support designated ship Class Maintenance Plan.

c. Material that cannot be procured and received by the contractor during the period from planned award to planned overhaul start.

d. Parts peculiar to the Navy.

C. NUMBERING WORK ITEMS

1. For surface ships utilizing S9040-AC-IDX-010, Expanded Ship Work Breakdown Structure for All Ships & Ship/Combat Systems (ESWBS), the Work Item number shall contain 8 digits. The first 5 digits shall be assigned using the appropriate ESWBS number.

NOTE: In the case of alterations, the 4th and 5th digit shall be as follows:

80 for title D ALTS and AERs
90 for title K ALTS
00 for ORDALTS

The 6th, 7th, and 8th digits shall be for industrial control serialization, from 000 through 999. For example:

a. A repair Work Item on propulsion boilers for a ship with 2 propulsion shafts shall be numbered 221-1X-XXX, where the first X is a 1 or 2 and the XXX is the industrial control serialization number.

b. A similar Work Item as (a) above, but accomplished on a D alteration, shall be numbered 221-8X-XXX.

c. A similar Work Item as (a) and (b) above that is divided into many work oriented items shall be numbered 221-XX-XXX, e.g., the 12th Work Item written on a propulsion boiler D alteration shall be numbered 221-8X-012.

2. SI numbers shall be assigned sequentially in the 009-XX series, such as 009-01, 009-09, ... 009-38. Local Standard Item numbers shall also be sequentially numbered, but in series 099-XX followed by the individual RMC/NSSA designator letter, i.e. 099-XXSE, for a SERMC LSI.

D. USE OF STANDARD WORK TEMPLATES AND CLASS STANDARD WORK TEMPLATES:

1. Whenever an applicable CSWT is available, it shall be used verbatim except as exempted in Paragraph 2 below. In the absence of a CSWT, an applicable SWT shall be used verbatim except as exempted in Paragraph 2 below.

2. Deviations from templates shall not be permitted except in the following cases:

a. Adding or deleting entire REQUIREMENTS paragraphs to suit the authorized work.

b. Filling in appropriate blanks with data to suit the technical requirements and the authorized work.

c. When designated as non-deviational or mandatory, the template shall be used as specified in Section II.

3. The following procedure should be utilized in choosing a template:

a. Review the indices for basic subject matter.

b. If available, select the item that most closely approximates the subject work requirements.

c. Review to determine if the subject matter is the same as, or close enough to, the work requirement to allow its use.

4. The following procedure shall be used in converting templates to Work Items:

a. Fill in the heading. File numbers and revision dates of templates shall remain in converted Work Items.

b. Fill in the applicable portions of paragraph 1.

c. Verify that the appropriate references are available and current.

d. Review paragraph 3, REQUIREMENTS, and add or delete requirements and fill in the appropriate blanks with data to suit the authorized work.

e. Review paragraph 4, NOTES, and add or delete subparagraphs as appropriate.

f. Review paragraph 5, GOVERNMENT FURNISHED MATERIAL (GFM), and add or delete GFM to suit the authorized work.

g. Review paragraph 2, REFERENCES, and add or delete references as required to suit any changes made in the REQUIREMENTS.

5. CSWTs shall be written to accomplish class specific repairs and modernization. In the preparation of CSWTs the following guidelines shall be used:

a. The CSWT shall include work necessary to accomplish approved repairs and/or modernization of the equipment.

(1) Technical Repair Standards (TRSs) may be used as a reference by identification of the specific section(s) to be used. The Planner shall ensure that the requirements are precise and do not invoke a string of possible additional work based on conditions found.

(2) Calibration, repair, or renewal of gages and other instrumentation shall be required. Generally, instruments costing less than 50 Dollars each should be removed and new instruments installed.

(3) When not an interference, replacement with new insulation for disturbed, damaged, or missing insulation shall be required.

(4) Inspection and painting of the foundations shall be required.

(5) Preservation of the equipment shall be required in accordance with Standard Item 009-32. Standard Item 009-11 invokes Standard Item 009-32 for surfaces to be insulated.

(6) Inspection of the alignment of piping to the equipment flanges shall be required. Accomplishment of alignment by adjustment of the adjacent hanger is considered within the scope of the work. Refitting of pipe or flange and installation of new hangers should be handled as a contract change and treated as growth within scope for departure report and funding purposes. Note that alignment of steam piping frequently involves cold pull-up to align the system while in operation. Refer to the ship's plan for the cold pull-up data.

b. The CSWT shall require disassembly of the equipment to the extent necessary to replace Planned Maintenance Material (listed in Appendix A of the TRS), and inspect sealing surfaces and pressure boundaries. Note that the TRS usually requires total disassembly of the unit. This may be unnecessary and, in fact, risky if shrink fits are involved and there is no indication of unsatisfactory fit or an obvious requirement to replace one of the parts (worn sleeve, cracked rotor, etc.). Likewise, Class 4 and 5 fit studs should not be removed from their setting unless necessary due to damaged threads or incorrect length. Replaced studs shall have an exposed thread length of not less than 2 and not more than 5 threads.

c. The CSWT shall require a complete inspection of the disassembled unit in accordance with criteria in Appendix C of the TRS.

d. The CSWT shall require that fasteners less than one inch diameter be replaced with new fasteners. Renewal of damaged and missing fasteners of one inch diameter or larger should be specified or be the subject of a contract change.

e. The CSWT shall include the operational test of the equipment and shall invoke the applicable portion of the approved test procedure, if one exists. The Ship's Force shall be given responsibility for specific operational test prerequisites as well as for accomplishment of the operational test if within their capability and no contractor interface is involved. Specific test prerequisites that are the contractor's responsibility because of specific work shall be specified in the CSWT.

f. Hydrostatic tests of pump or turbine casings shall not be specified unless weld repairs have been accomplished.

g. The CSWT shall require visual inspection of the entire pressure boundary and rotating parts, including a liquid penetrant inspection of a specific area (e.g., 200 square inches) and determination of wall thickness of a specific area (e.g., 100 square inches) by ultrasonic inspection. The specific areas should be described as eroded or corroded areas, high stress areas, such as inlet and discharge nozzles and areas in which visual inspection indicates an apparent crack. The TRS may require magnetic particle inspection of ferrous parts.

E. GENERAL REQUIREMENTS AND CRITERIA

1. When attachments are used, the attachments shall be identified, at the top of each page, centered in uppercase letters, by the word ATTACHMENT followed by a letter designation, such as ATTACHMENT A or ATTACHMENT B. Attachments shall never be utilized as a REFERENCE in any Work Item. Rarely will more than 2 or 3 attachments be required for any given Work Item. Each attachment will contain the Work Item number on each page and each page shall be numbered. The total number of pages in the Attachment shall be included in the total number of pages in the Work Item. For example, the footer on the attachment of a 3-page Work Item with a one-page attachment would read Page 4 of 4. In most instances, only one footer will be required.

2. Underscoring is limited to the heading, basic paragraph titles, and headings when listing repair parts or GFM as shown in Section VI.

3. Subparagraphing is limited to 4 digits (example 3.1.1.1). Each subparagraph is limited to a single thought or work sequence.

4. Page numbering shall be sequential in each Work Item and total pages indicated (e.g., 1 of 3, 2 of 3) in the lower center of the page. The item number shall be indicated in the lower right corner of each page.

5. File numbers are assigned to templates for SUPSHIP/RMC/NSSA reference purposes only. These numbers are located in the upper left section of page one. (Section VI refers)

6. The revision date of templates shall be indicated in the upper left section of page one. (Section VI refers)

7. The first page of LEVEL I Work Items shall be stamped LEVEL I, at the top, in minimum one-half inch letters.

8. The numeral "1" shall not be used but always be written as "one" or "One" as applicable. All numbers above one shall be written as a numeral, i.e., 2, 3, 4, etc.

F. COMMON WORK ITEM ERRORS. There is no substitute for good judgment and forethought on the part of the Work Item author. The task of writing definitive work requirements is complicated by the fact that no matter how technically correct the Work Item is, if the wording can be misunderstood or causes confusion, the Work Item is not a satisfactory contractual document. Paragraphs 1 through 6 list wording to be avoided in Work Item writing. These paragraphs attempt to highlight some of the mistakes commonly made in wording Work Items.

1. Ambiguous requirements. Ambiguities normally occur because of poor sentence structure and result in 2 or more interpretations of what is required. Contractors will invariably choose the least expensive interpretation. An example of an ambiguous requirement is: Install 12 storage bins (2ftx2ft) in the GSM (4-107-2) and dry provision (4-107-1) storerooms. Does this require a total of 12 or 24 bins?

2. Non-definitive requirements. Non-definitive requirements occur when accept or reject criteria is not included in the requirements. Some examples are:

- a. Check bearing temperature and vibration.
- b. Support new pipe with adequate hangers.
- c. Prove gaskets and bolting satisfactory.
- d. Close up as original.

Requirements for inspections and tests shall include definitive accept or reject criteria required for contractor and SUPSHIP/RMC/NSSA Quality Assurance evaluations.

3. Non-definitive phrases. Use of non-definitive phrases results in either non-definitive requirements or cancels the effect of stated requirements. Examples are:

- a. As applicable
- b. In accordance with latest requirements
- c. Or other recognized methods

- d. As practicable
- e. As necessary
- f. Or other suitable method
- g. Check for proper values

4. Catch-all phrases. The tendency is to use catch-all phrases to cover unforeseen conditions or developments and thereby avoid a contract modification. In reality, use of these methods is more costly to the Government than an occasional contract modification because the contractor will include contingency money in his bid for catch-all phrases. Examples are:

- a. Included, but not limited to
- b. As required
- c. Any and all or Each and every
- d. When and where necessary
- e. Etc.

5. Arbitrary statements. Statements that assign arbitrary authority to an activity or individual. Examples are:

- a. Where directed by the Ship's Force
- b. To the satisfaction of the SUPSHIP/RMC/NSSA representative
- c. In accordance with NAVSEA directives
- d. As directed by the NAVSSES (NAVSEC) representative

6. Arbitrary Authority. The contractor is not required to meet the expectations of:

- a. The on-scene surveyor
- b. The Commanding Officer's representative

G. DO'S AND DON'TS

DO use clear, simple language, free of terms subject to variation in interpretation.

DO define unusual technical terms.

DO write for the understanding of those who will have to use your product.

DO give specific and sufficient requirements and directions so that the users will not be in doubt as to what is required.

DO make each Work Item as detailed as necessary to describe the work to be accomplished.

DO use "shall" when the provision is mandatory; "may" when expressing a non-mandatory provision; "will" when expressing a simple future tense or to express a declaration of purpose on the part of the Government.

DO make positive, concise statements that cannot be misinterpreted.

DO verify that reference material is available and applicable.

DO use attachments to improve clarity.

DO become familiar with available background and reference material before preparing Work Items. It will aid in drafting a good Work Item. Include only those essential references in the Work Item itself.

DO convey the information as if you did not understand who would do the job or where it would be done. Release a job only with the knowledge that it can be satisfactorily accomplished as you intended with no further communication.

DO describe in clear, concise, and complete language exactly what you expect the contractor to do. This is what you are willing to pay for and this, and only this, is what you can expect him to deliver.

DO provide a manday and material pool when frontloading Work Items "as designated by the SUPERVISOR".

DO use "when directed by the SUPERVISOR" when the start date in a frontload statement is not known.

DO use spellcheck on all Work Items.

DON'T use colloquialisms.

DON'T use non-definitive statements such as "as required" or "as directed".

DON'T use statements that assign arbitrary authority to an activity or individual.

DON'T use catch-all phrases such as "as necessary", "excessive" or "as required".

DON'T use extraneous words like "thoroughly clean" or "extreme care is to be taken". Say "clean" (and indicate criteria).

DON'T use redundancy in an attempt to clarify or emphasize. Make each statement stand by itself.

DON'T put multiple thoughts in a single subparagraph. Keep each subparagraph short, concise and complete, expressing a single thought or requirement.

DON'T use such words as "proper" or "adequate" to signify a degree of acceptance. Include definitive acceptance or rejection criteria.

DON'T try to salvage a poor sentence or Work Item by indiscriminately jamming in words. Rewrite.

DON'T issue a Work Item with unresolved problems; you may be providing misguidance and misdirection.

DON'T use attachments or references to avoid writing requirements into the Work Item.

DON'T impose unrealistic requirements on the contractor. Exercise care in developing Work Items to ensure that requirements are always capable of being performed.

DON'T use symbols to define dimensions (except when used in drawing titles). For example: % for percent, " for inch, ' for foot. Spell it out: 30 percent, One FT, 2 FT, 24 inches.

DON'T call it plate in one sentence and plating in other sentences or cable in one sentence and wire in other sentences. Say it the same way throughout the same Work Item. Be consistent.

DON'T use the numeral 1 alone except in numbering paragraphs. Write it out as "One" or "one" as applicable.

DON'T include anything in the Work Item that is not necessary to describe the desired product.

DON'T use test requirements such as 1-1/2 times the working pressure. Instead say test at 150 PSIG. Give definitive test criteria.

DON'T direct the contractor to provide and install _____. He is required to provide material not specifically listed as GOVERNMENT FURNISHED MATERIAL (GFM).

DON'T direct the contractor to "replace with material in kind" or "replace with material same as existing". The existing material could be the cause of the failure. Specify the material to be used.

DON'T write open and inspect type Work Items unless directed by the work request.

DON'T change the intent of the work request by writing more or less than what is called for.

DON'T use "quantity" descriptions in paragraph 3 when called out in paragraph 1.3.

DON'T list known sources of material/services unless you have verified a quote from the source.

H. GLOSSARY OF PREFERRED TERMS

1. The following is a list of preferred terminology that should be used.

<u>PREFERRED</u>	<u>NOT PREFERRED</u>
Accomplish the requirements	Accomplish the work ... or Comply with
Accomplish	Conduct ... or Perform (Conduct may be used for an operational test)
Remove	Drain
Remove existing and install	Replace ... or Unship new
Disconnect	Unbolt
Preserve	Paint
Inspect	Check
Fabricate	Make
Measure	Take
Shall be	Is to be
(Specify a Quantity)	All
Verify	Demonstrate ... Prove
Ensure	Assure ... or Insure
Listed	Identified
Through	Thru
5,000 dollars	5000 dollars ... or \$5000

ANNEX A
TO
APPENDIX 4-E
OF
CHAPTER 4 TO
VOLUME VII
JOINT FLEET MAINTENANCE MANUAL (JFMM)

1. INVOKING GUIDE

a. Category I SIs: A determination shall be made as to which of these are applicable to a specific Job Order. The applicable SIs are invoked for a specific Job Order by inclusion in the IFB/RFP Schedule and listed in the index of Work Items which is included in each specification package.

<u>ITEM NO.</u>	<u>TITLE</u>	<u>USAGE/COMMENTS</u>
009-01	General Criteria; accomplish	Invoke for all solicitations.
009-02	Environmental Compliance Reports for Material Usage at Naval Facilities; provide	Invoke when work is being accomplished at a Naval facility where environmental compliance requirements are not specified locally.
009-03	Toxic and Hazardous Substances; control	Invoke for all solicitations.
009-04	Quality Management System; provide	Invoke for all solicitations.
009-05	Temporary Accesses; provide	Invoke for all solicitations.
009-06	Maintaining Protection and Cleanliness from Non-Radioactive Contaminate-Producing Operations; accomplish	Invoke for all solicitations.
009-07	Confined Space Entry, Certification, Fire Prevention and Housekeeping; accomplish	Invoke for manned vessels when it has been determined that the contractor will provide fire watches.
009-08	Fire Protection at Contractor's Facility; accomplish	Invoke when vessel is manned and work is accomplished at the Contractor's Facility.
009-10	Shipboard Asbestos- Containing Material (ACM); control	Invoke for all solicitations.
009-18	Magnetic Material; control	Invoke for all minesweeping ships and craft.
009-19	Provisioning Technical Documentation (PTD); provide	Invoke when hull, mechanical, electrical/electronic equipment or components are being furnished by the contractor.
009-20	Government Property; control	Invoke for all solicitations.

<u>ITEM NO.</u>	<u>TITLE</u>	<u>USAGE/COMMENTS</u>
009-21	Logistics and Technical Data; provide	Invoke when equipment is being installed new or replaces existing equipment or when equipment is being permanently removed from ship.
009-23	Interferences; remove and install	Invoke when known interferences will be removed.
009-24	Authorization, Control, Isolation, Blanking, and Tagging Requirements; accomplish	Invoke when equipment, systems, piping, or circuits require isolating, blanking and tagging for safety or cleanliness and to prevent operation of a system or equipment while work is being accomplished.
009-29	Asbestos-Free Pipe Hanger Liner Material; install	Invoke for installation of asbestos-free pipe hanger liner material.
009-34	Fire Protection of Unmanned Vessels at Contractor's Facility; provide	Invoke when work is being accomplished on unmanned vessels at Contractor's facility.
009-35	Confined Space Entry, Certification, Fire Prevention Utilizing Military Fire Watches, and Housekeeping; accomplish	Invoke for manned vessels when it has been determined that Ship's Force will provide fire watches.
009-39	Technical Manual Contract Requirement (TMCR) for New Technical Manuals for Commercial Equipment/Component; provide	Invoke for all solicitations.
009-40	Requirements for Contractor Cranes, Multi-Purpose Machines and Material Handling Equipment at Naval Facilities; accomplish	Invoke when work is being accomplished at a Naval facility.
009-59	Organotin Antifouling Material; control	Invoke for all docking availabilities.

<u>ITEM NO.</u>	<u>TITLE</u>	<u>USAGE/COMMENTS</u>
009-60	Schedule and Associated Reports for Availabilities Over 9 Weeks in Duration ; provide and manage	<i>Invoke for availabilities over 9 weeks in duration when authorized by the customer.</i>
009-61	Shipboard Use of Fluorocarbons; control	Invoke for all solicitations.
009-64	Synthetic Fire Resistant Hydraulic Fluid; control	Invoke for all solicitations.
009-65	Polychlorinated Biphenyls (PCBs); control	Invoke for all solicitations.
009-67	Integrated Total Ship Testing; manage	Invoke when authorized by the Customer.
009-69	Heavy Weather Plan; provide	Invoke for all solicitations.
009-70	Confined Space Entry, Certification, Fire Prevention and Housekeeping for Unmanned Vessels; accomplish	Invoke when work is being accomplished on unmanned vessels.
009-72	Physical Security at Private Contractor's Facility; accomplish	Invoke when work is being accomplished at contractor's facility.
009-73	Shipboard Electrical/Electronic Cable; remove, relocate, repair, and install	Invoke for all solicitations requiring electrical work.
009-74	Occupational, Safety and Health Requirements; accomplish	Invoke for all solicitations.
009-77	Cofferdam Requirements; accomplish	Invoke for all solicitations.
009-79	Government Owned Material (GOM); status reporting	Invoke in solicitations for multi-ship/multi-year availabilities (when authorized by the Customer).
009-80	Ship's Facilities; provide	Invoke for availabilities when ship's crew remains onboard.

<u>ITEM NO.</u>	<u>TITLE</u>	<u>USAGE/COMMENTS</u>
009-81	Compartment Closeout; accomplish	Invoke for CNO scheduled availabilities when formal compartment closeout schedule is not used.
009-82	Data Requirements When Installing an Equal Component Vice Specified Component; provide	Invoke for all solicitations.
009-83	Wire Rope Fitting Verification; provide	Invoke for availabilities when wire rope rigging is repaired/altered.
009-84	Accountability of Temporary Fasteners; provide	Invoke for all solicitations.
009-86	Recovery of Chlorofluorocarbon (CFC's), Fluorocarbon and Fire Suppressant Halon (H) Materials; control	Invoke when working on fluorocarbon or halon-containing systems.
009-87	Chlorination Procedures; accomplish	Invoke when working potable water system.
009-88	Collection, Holding and Transfer (CHT) and Mogas Tanks, Spaces, and Piping, including Sewage or Mogas-Contaminated Tanks, Spaces and Piping; certify	Invoke for all solicitations.
009-89	Purchase and Inspection Requirements for Contractor Furnished Anodes; accomplish	Invoke when inspecting/installing new anodes.
009-93	Emergency Planning and Community Right-to-Know Act (EPCRA) and Pollution Prevention Act (PPA) Information; provide	Invoke for all solicitations.
009-94	General Environmental Requirements for Work at Contractor's Facility; accomplish	Invoke when work is being accomplished at the contractor's facility.

<u>ITEM NO.</u>	<u>TITLE</u>	<u>USAGE/COMMENTS</u>
009-95	Mechanically Attached Fittings (MAF's) for Piping Systems; install	Invoke when repairs/alterations are done on piping systems.
009-97	Shipbuilding and Ship Repair Operations National Emission Standard for Hazardous Air Pollutants (NESHAPS) for Surface Coatings Information; provide	Invoke for all solicitations.
009-99	Ship Departure Report; provide	Invoke for all CNO availabilities; when authorized by the Customer for other availabilities.
009-100	Ship's Stability Process Control Procedure (PCP); maintain	Invoke for all solicitations for CG-47 and DDG-51 Class ships.
009-101	Requirements for Mooring, Entry to, and Departure from the Contractor's Facility; accomplish	Invoke when work is being accomplished at the contractor's facility (for ships over 100 feet in length).
009-102	Alteration Verification; provide	Invoke for all solicitations that contain ship modernization Work Items.
009-103	Weight and Moment Change Data; provide	Invoke when work being accomplished will result in weight and moment changes.
009-106	Work Authorization Form Coordinator (WAFCOR); provide	Invoke when authorized by the Customer.
009-108	Aircraft Carrier Requirements for Mooring, Entry to, Movement within, and Departure from Contractor's Facility; accomplish	Invoke for aircraft carriers when work is being accomplished at the contractor's facility.
009-109	Special Requirements for Non-SUBSAFE Work on SUBSAFE-Certified Vessels; accomplish	Invoke when authorized by the Customer.

<u>ITEM NO.</u>	<u>TITLE</u>	<u>USAGE/COMMENTS</u>
009-110	Special Requirements for Non-Nuclear Work on Nuclear Vessels; accomplish	Invoke when authorized by the Customer.
009-111	Schedule and Associated Reports for Availabilities 9 Weeks or Less in Duration; provide and manage	<i>Invoke for availabilities 9 weeks or less in duration when authorized by the customer.</i>
009-112	<i>Prevention of Radiographic-Inspection Ionizing-Radiation Hazards; accomplish</i>	<i>Invoke for availabilities when work involves radiographic inspection.</i>

ANNEX B
TO
APPENDIX 4-E
OF
CHAPTER 4 TO
VOLUME VII
JOINT FLEET MAINTENANCE MANUAL (JFMM)

ANNEX B

NAVSEA STANDARD PHRASEOLOGY

1. **Discussion.** The standard phraseology herein is promulgated as NAVSEA Standard Phraseology. Each user activity shall utilize this standard phraseology to ensure reliable and consistent reproduction of the wording contained herein. An efficient way to ensure this goal is to store new phraseology in a permanent memory form such as on computer systems media or other means. When a phrase is required it will be reproduced from the stored memory. This reproduction will ultimately save considerable labor in the production process and will immediately improve accuracy and reduce the need for extensive proofreading of Work Items.

2. **Changes.** Additions, deletions, or modifications to this standard phraseology shall be made by submitting the recommended change to the SSRAC for consideration at the annual meeting. The following basic guidelines shall be applied when evaluating new proposed phrases.

A. Phrases shall be applicable for all user activities and, therefore, ***should not be*** limited to a particular class of ship. ***However, when phrases do apply to a particular class of ship, it should be noted (e.g., F15b).***

B. Phrases should be limited to a minimum number of sentences. Phrases containing numerous sentences will be referred for consideration as a template.

C. The sentence structure shall be grammatically applicable for singular and plural situations. To achieve this, the word "each" should be utilized in lieu of having to pluralize words within the phrase every time repair, replacement, removal, installation, testing, etc., when more than one unit needs to be addressed.

D. Each phrase shall express a complete thought, in clear, concise language which is contractually sound as required by Appendix 4-E, Section VII, paragraph B-4(f). Conciseness is a key area of concern.

E. Sentence structure of phrases shall be verb, noun format as required by Appendix 4-E, Section VII, paragraph B-4(e).

F. Each phrase shall identify compliance requirements as required by Appendix 4-E, Section VII, paragraph B-4(e).

G. Ambiguous wording shall not be used as indicated in Appendix 4-E, Section VII, paragraph B-4(f).

H. Do not refer to the word "paragraph" when referring to another part of the Work Item (except for Attachments). For example:

"3.____ Remove the equipment listed in 1.3."

I. All references to NAVSEA or NAVSUP drawings or technical manuals should start with the drawing or technical manual number and omit the word NAVSEA or NAVSUP. The above will facilitate the recall of a numerical listing of references by drawing/technical manual number. For example: |

S9086-VG-STM-010/CH-634, Deck Coverings

J. Minimize the number of blanks contained within phrases which must be filled in by the planner/surveyor.

3. Organization. The standard phraseology presented below is organized into 7 sections and, with the exception of Section C, each phrase within each section is assigned a unique identification number. The 7 sections are identified by the letter designation of the section, followed by a unique number. The 7 sections are as follows:

- A. Standard phraseology for invoking Category II Standard Items, for use in various disciplines. Use of this section is mandatory.
- B. Standard phrases for general use in various disciplines.
- C. Not used (incorporated in Appendix 4-E).
- D. Standard phrases for use in structural disciplines.
- E. Standard phrases for use in mechanical disciplines.
- F. Standard phrases for use in electronic and electrical disciplines.
- G. Standard phrases for use in the piping disciplines.

4. Instructions. Guidance instructions are also provided where appropriate. The guidance instructions and notes are listed first, then the phrase and the phrase number. If any guidance instructions or notes are applicable to the blanks, these will appear before the phrase. Standard phrases, which cannot stand alone or phrases where optional uses are permitted will generally contain a note. The phrases herein, which include the words "using 2.__ for guidance." shall be deleted when guidance is not available. The words "in accordance with 2.__." shall be substituted when 2.__ requirements are mandatory.

STANDARD PHRASEOLOGY

SECTION A

1. This section of standard phraseology contains the approved standard phrases to be used when invoking Category II Standard Items. The Standard Item number and title are provided at the top of each phrase or group of phrases associated with the Standard Item list.

SI

009-09 PROCESS CONTROL PROCEDURE (PCP); PROVIDE AND ACCOMPLISH

Accomplish the requirements of 009-09 of 2.1 for ____.

A9

009-11 INSULATION AND LAGGING REQUIREMENTS; ACCOMPLISH

NOTE: NOT TO BE USED FOR INTERFERENCE REPLACEMENTS COVERED BY 009-23. USE A-11a TO INSTALL NEW PIPING, MACHINERY, AND HULL INSULATION AND LAGGING.

CONSIDERATION SHALL BE GIVEN TO HIGH TRAFFIC AREAS AS DEFINED IN 4.2 OF MIL-STD-769.

Accomplish the requirements of 009-11 of 2.1 for _____.

A11a

Accomplish the requirements of 009-11 of 2.1.

A11b

009-12 WELDING, FABRICATION, AND INSPECTION REQUIREMENTS; ACCOMPLISH

NOTE: A12b SHALL BE A SUBPARAGRAPH OF A12a IF MORE THAN A VISUAL INSPECTION IS REQUIRED.

Accomplish the requirements of 009-12 of 2.1, including Table ____, Column(s) ____, Lines One through ____.

A12a

NOTE: A12b SHALL BE USED ONLY AS A SUBPARAGRAPH TO A12a.
THIS PHRASE CANNOT BE USED TO SPECIFY NDT REQUIREMENTS
NOT ASSOCIATED WITH WELDING OR BRAZING. SEE B25 AND
B26.

Accomplish nondestructive testing in accordance with Line ____.

A12b

Accomplish the requirements of 009-12 of 2.1, including Table ____, Column(s) ____, Lines One through ____, for ____.

A12c

009-13 METERS; REPAIR AND CERTIFY CALIBRATION

NOTE: USE B50 AS A SUBPARAGRAPH TO A13a.

Accomplish the requirements of 009-13 of 2.1 for each ____ listed in ____, using 2.__ for guidance.

A13a

Calibrate and adjust each new meter in accordance with 009-13 of 2.1.

A13b

009-14 GAGES AND THERMOMETERS; REPAIR AND CERTIFY CALIBRATION

NOTE: USE B50 AS A SUBPARAGRAPH TO A14a.

Accomplish the requirements of 009-14 of 2.1 for each ____.

A14a

Calibrate and adjust each new gage and/or thermometer in accordance with 009-14 of 2.1.

A14b

009-15 ROTATING MACHINERY; BALANCE

Accomplish the requirements of 009-15 of 2.1 for each rotating assembly.

A15

009-16 ELECTRONIC EQUIPMENT; REPAIR

NOTE: INSERT EQUIPMENT TECHNICAL MANUAL IN REFERENCES.

USE B50 AS A SUBPARAGRAPH TO A16.

Accomplish the requirements of 009-16 of 2.1 for the _____ listed in _____, using 2.____ for guidance.

A16

009-17 ROTATING ELECTRICAL EQUIPMENT; REPAIR

NOTE: INSERT EQUIPMENT TECHNICAL MANUAL IN REFERENCES.

Accomplish the requirements of 009-17 of 2.1 for the equipment listed in 1.3.____, using 2.____ for guidance.

A17

009-22 SHIPBOARD ELECTRIC CABLE; TEST

Accomplish the requirements of 009-22 of 2.1 for the cable(s) terminating in the equipment listed in ____.

A22

009-25 STRUCTURAL BOUNDARY TEST; ACCOMPLISH

Accomplish the requirements of 009-25 of 2.1 for preliminary air test of _____. Test pressure shall be _____ PSIG.

A25a

NOTE: USE A25b FOR TANKS, VOIDS, AND COFFERDAMS. THE ALLOWABLE DROP OUNCES PER SQUARE INCH FOR WIRING TRUNK AND OTHER SPACES ARE 5 AND 2 RESPECTIVELY.

Accomplish the requirements of 009-25 of 2.1 for air test of _____. Test pressure shall be _____ PSIG. Maintain test pressure for 15 minutes for temperature stabilization prior to start of test. Hold test pressure for 10 minutes. Allowable drop in pressure: None.

A25b

NOTE: SALT WATER SHALL BE SPECIFIED FOR USE ON WOOD.

Accomplish the requirements of 009-25 of 2.1 for the _____ hose test of _____. Allowable leakage: None.

A25c

Accomplish the requirements of 009-25 of 2.1 for the vacuum box test of _____. Allowable leakage: None.

A25d

Accomplish the requirements of 009-25 of 2.1 for an air hose, water hose, or vacuum box test of _____. Allowable leakage: None.

A25e

009-26 DECK COVERING REQUIREMENTS; ACCOMPLISH

NOTE: IDENTIFY CORRECT ATTACHMENT ACCORDING TO TYPE OF DECK COVERING INVOLVED.

Accomplish the requirements of 009-26 of 2.1, including Attachment ____.

A26a

Accomplish the requirements of 009-26 of 2.1, including Attachment ___, for installation of ___, in each location listed in ____.

A26b

Accomplish the requirements of 009-26 of 2.1 for ____.

A26c

009-27 MATERIAL IDENTIFICATION AND CONTROL (MIC) FOR **LEVEL I** SYSTEMS;
 ACCOMPLISH

Accomplish the requirements of 009-27 of 2.1.

A27

009-30 BOILER SAMPLE TUBES; INSPECT

Accomplish the requirements of 009-30 of 2.1.

A30

009-31 BOILER WATERJET CLEANING; ACCOMPLISH

Accomplish the requirements of 009-32 of 2.1.

A31

009-32 CLEANING AND PAINTING REQUIREMENTS; ACCOMPLISH

NOTE: USE A32a WHEN MAIN ITEM IS PRESERVATION AND THE TABLES
 IN 009-32 PROVIDE A CHOICE. USE A32b FOR OTHER PRIMARY
 PRESERVATION WORK AND TOUCH-UP. SPECIFY DEGREE OF
 PRESERVATION, i.e., FOUNDATION, NEW AND DISTURBED
 SURFACES.

Accomplish the requirements of 009-32 of 2.1, including Table __, Line(s)
__, for ____.

A32a

Accomplish the requirements of 009-32 of 2.1 for _____.

A32b

Accomplish the requirements of 009-32 of 2.1, including Table __, Line(s) __, Column(s) __, for ____.

A32c

Accomplish the requirements of 009-32 of 2.1 for new and disturbed surfaces.

A32d

009-33 ROTATING ELECTRICAL EQUIPMENT; REWIND

NOTE: INSERT EQUIPMENT TECHNICAL MANUAL IN REFERENCES.

Accomplish the requirements of 009-33 of 2.1 for equipment listed in 1.3.__, using 2._ for guidance.

A33

009-36 CONTROLLER; REPAIR

NOTE: INSERT EQUIPMENT TECHNICAL MANUAL IN REFERENCES.

USE B50 AS A SUBPARAGRAPH TO A36.

Accomplish the requirements of 009-36 of 2.1 for each controller listed in __, using 2._ for guidance.

A36

009-37 GENERAL PROCEDURES FOR WOODWORK; ACCOMPLISH

NOTE: INVOKE IN WORK ITEMS REQUIRING WOOD REPAIRS/NEW INSTALLATIONS.

Accomplish the requirements of 009-37 of 2.1 for ____.

A37a

NOTE: A37b SHALL BE USED ONLY AS A SUBPARAGRAPH TO A37a.
INVOKE A37b WHEN ACCOMPLISHING REPAIRS/NEW
INSTALLATIONS OF DECK PLANK CAULKING SEAMS.

Caulking compound for deck plank caulking seams shall be ____.

A37b

009-38 BOILER DRY LAY-UP; ACCOMPLISH

Accomplish the requirements of 009-38 of 2.1 for ____.

A38

009-41 TECHNICAL MANUAL CONTRACT REQUIREMENT (TMCR) FOR A TOPICALLY
STRUCTURED TECHNICAL MANUAL; PROVIDE

NOTE: USE FOR NEW MILITARY TECHNICAL MANUALS FOR NON-COMPLEX
EQUIPMENT BEING PROCURED TO MILITARY SPECIFICATIONS.

Accomplish the requirements of 009-41 of 2.1.

A41

009-42 TECHNICAL MANUAL CONTRACT REQUIREMENT (TMCR) FOR UPDATING
TECHNICAL MANUALS; PROVIDE

NOTE: USE FOR UPDATING EXISTING NAVSEA TECHNICAL MANUALS
(INCLUDING SHIP'S SELECTED RECORD DATA) TO REFLECT
CHANGES IN HARDWARE CONFIGURATION.

Accomplish the requirements of 009-42 of 2.1.

A42

009-43 LIGHT-OFF ASSESSMENT (LOA) SUPPORT FOR STEAM PROPULSION SYSTEM;
PROVIDE

Accomplish the requirements of 009-43 of 2.1.

A43

009-44 LIGHT-OFF ASSESSMENT (LOA) SUPPORT FOR GAS TURBINE PROPULSION
SYSTEM; PROVIDE

Accomplish the requirements of 009-44 of 2.1.

A44

NOTE: FOR STANDARD ITEMS 009-45, 009-46, 009-47, 009-48, 009-50, 009-51, 009-52, 009-53, 009-55, AND 009-96, VALVE REMOVAL AND REINSTALLATION SHALL BE SPECIFIED IN THE INVOKING WORK ITEM.

009-45 TAPERED PLUG VALVE; REPAIR

NOTE: A45b SHALL BE A SUBPARAGRAPH TO A45a.

FOR SHOP REPAIR AND TEST.

TEST PRESSURE FOR SEAT TIGHTNESS SHALL BE SPECIFIED IN THE INVOKING WORK ITEM.

Accomplish the requirements of 009-45 of 2.1 for each plug valve listed in ___, using 2.1 for guidance.

A45a

The seat tightness test pressure is ___ PSIG.

A45b

009-46 BUTTERFLY VALVE, SYNTHETIC AND METAL SEATED; REPAIR

NOTE: A46b SHALL BE A SUBPARAGRAPH TO A46a.

FOR SHOP REPAIR AND TEST.

TEST PRESSURE FOR SEAT TIGHTNESS SHALL BE SPECIFIED IN THE INVOKING WORK ITEM.

Accomplish the requirements of 009-46 of 2.1 for each butterfly valve listed in ___, using 2.1 for guidance.

A46a

The seat tightness test pressure is ____ PSIG.

A46b

009-47 GATE VALVE; REPAIR

NOTE: A47b SHALL BE A SUBPARAGRAPH TO A47a.

FOR SHOP REPAIR AND TEST.

TEST PRESSURE FOR SEAT TIGHTNESS SHALL BE SPECIFIED IN
THE INVOKING WORK ITEM. SHALL NOT BE USED FOR HIGH
PRESSURE STEAM VALVES.

Accomplish the requirements of 009-47 of 2.1 for each gate valve listed in
____, using 2._ for guidance.

A47a

The seat tightness test pressure is ____ PSIG.

A47b

009-48 PRESSURE SEAL BONNET VALVE; REPAIR (SHOP)

NOTE: A48b SHALL BE A SUBPARAGRAPH TO A48a.

FOR SHOP REPAIR AND TEST.

TEST PRESSURE FOR SEAT TIGHTNESS SHALL BE SPECIFIED IN
THE INVOKING WORK ITEM.

Accomplish the requirements of 009-48 of 2.1 for each pressure seal bonnet
valve listed in ____ , using 2._ for guidance.

A48a

The seat tightness test pressure is ____ PSIG.

A48b

009-49 PRESSURE SEAL BONNET VALVE; REPAIR (IN-LINE)

NOTE: FOR IN-LINE REPAIR.

OPERATIONAL TEST OF THE VALVE SHALL BE SPECIFIED IN THE INVOKING WORK ITEM.

Accomplish the requirements of 009-49 of 2.1 for each in-line pressure seal bonnet valve listed in ___, using 2.__ for guidance.

A49

009-50 HORIZONTAL SWING CHECK VALVE; REPAIR

NOTE: FOR SHOP REPAIR AND TEST.

SHALL NOT BE USED FOR SCUPPER VALVES.

Accomplish the requirements of 009-50 of 2.1 for each check valve listed in ___, using 2.__ for guidance.

A50

009-51 GLOBE, GLOBE ANGLE, AND GLOBE STOP CHECK VALVE; REPAIR

NOTE: A51b SHALL BE A SUBPARAGRAPH TO A51a.

FOR SHOP REPAIR AND TEST.

TEST PRESSURE FOR SEAT TIGHTNESS SHALL BE SPECIFIED IN THE INVOKING WORK ITEM.

SHALL NOT BE USED FOR HIGH PRESSURE STEAM VALVES.

Accomplish the requirements of 009-51 of 2.1 for each globe valve listed in ___, using 2.__ for guidance.

A51a

The seat tightness test pressure is ___ PSIG.

A51b

009-52 RELIEF VALVE; REPAIR

NOTE: A52b-A52d SHALL BE SUBPARAGRAPHS TO A52a.

FOR SHOP REPAIR AND TEST.

TEST MEDIUM AND TEST PRESSURE FOR SEAT TIGHTNESS AND
VALVE LIFTING SHALL BE SPECIFIED IN THE INVOKING WORK
ITEM.

SHALL NOT BE USED FOR BOILER SAFETY VALVES OR BALANCED
DESIGN RELIEF VALVES.

Accomplish the requirements of 009-52 of 2.1 for each relief valve listed in
____, using 2._ for guidance.

A52a

The test medium is ____.

A52b

The seat tightness test pressure is ____ PSIG.

A52c

The lifting pressure is ____ PSIG.

A52d

009-53 BOLTED BONNET STEAM VALVE; REPAIR (SHOP)

NOTE: A53b SHALL BE A SUBPARAGRAPH TO A53a.

FOR SHOP REPAIR AND TEST.

TEST PRESSURE FOR SEAT TIGHTNESS SHALL BE SPECIFIED IN
THE INVOKING WORK ITEM.

Accomplish the requirements of 009-53 of 2.1 for each bolted bonnet steam
valve listed in ____, using 2._ for guidance.

A53a

The seat tightness test pressure is ____ PSIG.

A53b

009-54 BOLTED BONNET STEAM VALVE; REPAIR (IN-LINE)

NOTE: FOR IN-LINE REPAIR.

OPERATIONAL TEST OF THE VALVE, INCLUDING BYPASS VALVE,
SHALL BE SPECIFIED IN WORK ITEM.

Accomplish the requirements of 009-54 of 2.1 for each in-line bolted bonnet steam valve listed in ____, using 2.1 for guidance.

A54

009-55 REGULATING/REDUCING VALVE; REPAIR

NOTE: A55b-A55c SHALL BE SUBPARAGRAPHS TO A55a.

FOR SHOP REPAIR AND TEST.

TEST MEDIUM AND TEST PRESSURE FOR VALVE INLET AND
REGULATED PRESSURE/TEMPERATURE SHALL BE SPECIFIED IN
THE INVOKING WORK ITEM.

A55a-A55c SHALL BE USED FOR PRESSURE
REGULATORS/REDUCERS ONLY.

Accomplish the requirements of 009-55 of 2.1 for each regulating/reducing valve listed in ____, using 2.1 for guidance.

A55a

The test medium is ____.

A55b

The inlet/regulating or reducing pressure is ____ PSIG to ____ PSIG.

A55c

NOTE: A55e-A55f SHALL BE SUBPARAGRAPHS TO A55d.

A55d-A55f SHALL BE USED FOR TEMPERATURE REGULATORS ONLY.

Accomplish the requirements of 009-55 of 2.1 for each regulating/reducing valve listed in ____, using 2._ for guidance.

A55d

The test medium is ____.

A55e

The regulated temperature is ____ degrees Fahrenheit.

A55f

009-56 BOILER WET LAY-UP; ACCOMPLISH

Accomplish the requirements of 009-56 of 2.1 for ____.

A56

009-57 REDUCTION GEAR SECURITY REQUIREMENTS; ACCOMPLISH

NOTE: A57 TO BE INVOKED AS 3.1 IN WORK ITEMS WHERE REDUCTION GEAR SECURITY IS AFFECTED.

Accomplish the requirements of 009-57 of 2.1.

A57

009-58 PUMP AND DRIVER SHAFT ALIGNMENT; ACCOMPLISH

NOTE: A58 TO BE INVOKED ANY TIME THE ROTOR OF A PUMP OR DRIVER (MOTOR/TURBINE) IS DISTURBED FOR REPAIR OR REPLACEMENT.

Accomplish the requirements of 009-58 of 2.1 for ____.

A58

009-62 BOILER HANDHOLE AND MANHOLE SEATS AND PLATES; INSPECT

Accomplish the requirements of 009-62 of 2.1 for ____.

A62

009-63 LUBRICATING OILS AND HYDRAULIC FLUIDS; ANALYZE

NOTE: A563b SHALL BE A SUBPARAGRAPH TO A63a.

SPECIFY QUANTITY AND TYPE OF SAMPLE.

Accomplish the requirements of 009-63 of 2.1.

A63a

Test and analyze ____ samples.

A63b

NOTE: A563b WILL BE A SUBPARAGRAPH TO A63a-A63b, AS APPLICABLE.

SPECIFY THE LOCATION FROM WHICH SAMPLES OF LUBRICATING OR HYDRAULIC FLUIDS ARE TO BE TAKEN.

Take a sample from ____ in accordance with ASTM D 4057.

A63c

009-66 LIGHT-OFF ASSESSMENT (LOA) SUPPORT FOR DIESEL PROPULSION SYSTEM;
PROVIDE

Accomplish the requirements of 009-66 of 2.1.

A66

009-68 BOLTED BONNET VALVE; REPAIR

NOTE: FOR IN-LINE REPAIR.

OPERATIONAL TEST OF THE VALVE SHALL BE SPECIFIED IN THE INVOKING WORK ITEM.

Accomplish the requirements of 009-68 of 2.1 for each in-line bolted bonnet valve listed in ___, using 2._ for guidance.

A68

009-71 TESTING REQUIREMENTS FOR PIPING SYSTEMS; ACCOMPLISH

NOTE: INVOKE A71a FOR NON-PRESSURIZED SYSTEMS ONLY.

Accomplish the requirements of 009-71 of 2.1 for new and disturbed piping.

A71a

NOTE: A71b-A71e ARE FOR USE WHERE THE OPERATING PRESSURE TEST IS ALLOWED BY NSTM CH-505. TEST PRESSURE AND TEST MEDIUM SHALL BE LISTED.

Accomplish the requirements of 009-71 of 2.1 for new and disturbed piping system.

A71b

Test pressure shall be ____ PSIG, using ____, when the hydrostatic test option is selected.

A71c

NOTE: A71d-A71e ARE FOR USE IN FEEDWATER AND ELECTRONIC COOLING WATER PIPING SYSTEMS WHERE CONDUCTIVITY LEVELS REQUIRE MONITORING.

Accomplish the requirements of 009-71 of 2.1 for new and disturbed piping system.

A71d

Test pressure shall be ____ PSIG, using feedwater conforming to Paragraphs 220-22.18 or 220-22.20, and 220-22.21 and 220-22.22 of 2.____, when the hydrostatic test option is selected.

A71e

NOTE: A71h-A71j ARE FOR USE WHERE THE HYDROSTATIC TEST IS REQUIRED BY NSTM CH-505. TEST MEDIUM AND SYSTEM IDENTIFICATION SHALL BE LISTED.

Accomplish the requirements of 009-71 of 2.1 for hydrostatic test, using clean, fresh water at ____ PSIG, for new and disturbed ____ piping systems.

A71h

Accomplish the requirements of 009-71 of 2.1 for hydrostatic test, using feedwater at ____ PSIG, for new and disturbed ____ piping systems.

A71i

Feedwater shall conform to Paragraphs 220-22.18 or 220-22.20, and 220-22.21 and 220-22.22 of 2.____.

A71j

NOTE: USE A71i FOR AIR TEST OF PIPING SYSTEMS WHERE WATER WOULD BE DETRIMENTAL.

Accomplish the requirements of 009-71 of 2.1 for new and disturbed ____ piping **systems**, using clean, dry air **or nitrogen** at ____ PSIG.

A71l

NOTE: FOR USE WITH VCHT SYSTEMS (PORTIONS UNDER VACUUM).

Accomplish the requirements of 009-71 of 2.1 for a visual tightness test of the Vacuum, Collection, Holding and Transfer (VCHT) Sewage System to at least 24 inches of Hg (vacuum) for at least 10 minutes, with less than 10 percent drop.

A71m

009-75 CIRCUIT BREAKER; REPAIR

NOTE: INSERT EQUIPMENT TECHNICAL MANUAL IN REFERENCES.

USE B50 AS A SUBPARAGRAPH TO A75.

Accomplish the requirements of 009-75 of 2.1 for ____, using 2.____ for guidance.

A75

009-76 WAVEGUIDE AND TRANSMISSION LINE TEMPORARY LAY-UP, PRESSURIZATION, AND PURGING; ACCOMPLISH

Accomplish the requirements of 009-76 of 2.1 for ____.

A76

009-78 PASSIVE COUNTERMEASURES SYSTEM (PCMS) MATERIAL REPAIR/ INSTALLATION REQUIREMENTS; ACCOMPLISH

Accomplish the requirements of 009-78 of 2.1.

A78

009-85 GOVERNMENT SPONSORED PLANNING YARD/CONFIGURATION DATA MANAGER (CDM) ON-SITE REPRESENTATIVE FACILITY; PROVIDE

Accomplish the requirements of 009-85 of 2.1.

A85

009-90 TECHNICAL REPRESENTATIVE; PROVIDE

NOTE: USE A90b AS A SUBPARAGRAPH TO A90a WHEN TECHNICAL SUPPORT, SPECIAL TOOLS, AND/OR EQUIPMENT ARE REQUIRED.

Accomplish the requirements of 009-90 of 2.1.

A90a

Provide the services of a ____ technical representative to ____.

A90b

Accomplish the requirements of 009-90 of 2.1 for ____.

A90c

009-91 PROPELLER IN-PLACE INSPECTION; ACCOMPLISH

Accomplish the requirements of 009-91 of 2.1 for equipment listed in ____.

A91

009-92 RESILIENT MOUNT; REMOVE AND INSTALL

NOTE: INSERT EQUIPMENT TECHNICAL MANUAL.

Accomplish the requirements of 009-92 of 2.1 for equipment listed in ____,
using 2.__ for guidance.

A92

009-96 BALL VALVE; REPAIR

NOTE: A96b SHALL BE A SUBPARAGRAPH TO A96a.

FOR SHOP REPAIR AND TEST.

TEST PRESSURE FOR SEAT TIGHTNESS SHALL BE SPECIFIED IN
THE INVOKING WORK ITEM.

Accomplish the requirements of 009-96 of 2.1 for each ball valve listed in
____, using 2.__ for guidance.

A96a

The seat tightness test pressure is ____ PSIG.

A96b

009-98 MONEL FASTENERS; INSPECT

Accomplish the requirements of 009-98 of 2.1.

A98a

Remove existing and install new up to ____ percent of fasteners.

A98b

009-104 VIBRATION TESTING AND ANALYSIS; ACCOMPLISH

Accomplish the requirements of 009-104 of 2.1.

A104

009-105 THERMAL SPRAYED COATINGS FOR MACHINERY COMPONENT REPAIR;
ACCOMPLISH

NOTE: USE WHEN THERMAL SPRAY COATING (EXCEPT ALUMINUM)
MACHINERY COMPONENTS. SPECIFY THE TYPE OF COATING
MATERIAL AND EITHER WIRE SPRAY OR POWDER SPRAY PROCESS.

Accomplish the requirements of 009-105 of 2.1 for the ____ listed in 1.==.
The coating material shall be ____, using the ____ spray process.

A105

009-107 PIPING SYSTEM CLEANLINESS (NON-NUCLEAR); ACCOMPLISH

Accomplish the requirements of 009-107 of 2.1.

A107a

NOTE: PLANNER SPECIFY LEVEL II OR LEVEL III.

General Cleaning shall be Level ____.

A107b

009-113 ROTATING ELECTRICAL EQUIPMENT WITH SEALED INSULATION SYSTEMS
(SIS); REWIND

Accomplish the requirements of 009-113 of 2.1.

A113

009-114 MOLD REMEDIATION; ACCOMPLISH

Accomplish the requirements of 009-114 of 2.1.

A114

STANDARD PHRASEOLOGY

SECTION B

1. This section of standard phraseology is for general use in all disciplines.

NOTE: SHALL BE USED WHEN THE EXCEPTIONS LISTED IN 3.1 OF 009-23 ARE TO BE REMOVED/INSTALLED AS INTERFERENCES.

Remove and install _____ as interferences where required.

B2

Accomplish a static load test of the _____. A test load of _____ pounds shall be applied for 10 minutes. Remove the test load and inspect _____ and surrounding structure for evidence of damage or permanent deformation. Allowable damage: None.

B3

B4 Systems and Specifications, SSPC Painting Manual, Volume 2

NOTE: USE B4 FOR REFERENCE FOR PHRASES B5a-B5h.

SOLVENT CLEANING SPECIFICATION COVERS THE PROCEDURE REQUIRED FOR THE REMOVAL OF OIL, GREASE, DIRT, SOIL, SALTS, AND CONTAMINANTS BY CLEANING WITH SOLVENT, VAPOR, ALKALI, EMULSION, OR STEAM.

Solvent clean _____. Accomplish the requirements of Surface Preparation Specification SSPC-SP-1 of 2.____.

B5a

NOTE: HAND TOOL CLEANING SPECIFICATION COVERS THE PROCEDURE AND DEGREE OF CLEANLINESS REQUIRED FOR THE REMOVAL OF LOOSE RUST, LOOSE MILL SCALE, AND LOOSE PAINT BY HAND CHIPPING, HAND SCRAPING, HAND SANDING, HAND BRUSHING, OR BY A COMBINATION OF THESE METHODS.

Hand tool clean _____. Accomplish the requirements of Surface Preparation Specification SSPC-SP-2 of 2.____.

B5b

NOTE: POWER TOOL CLEANING SPECIFICATION COVERS THE PROCEDURE AND DEGREE OF CLEANLINESS REQUIRED FOR THE REMOVAL OF LOOSE RUST, LOOSE MILL SCALE, AND LOOSE PAINT WITH POWER WIRE BRUSHES, POWER IMPACT TOOLS, POWER GRINDERS, POWER SANDERS OR BY A COMBINATION OF THESE METHODS.

Power tool clean _____. Accomplish the requirements of Surface Preparation Specification SSPC-SP-3 of 2.____.

B5c

NOTE: WHITE BLAST CLEANING SPECIFICATION COVERS THE PROCEDURE AND DEGREE OF CLEANLINESS REQUIRED FOR THE REMOVAL OF MILL SCALE, RUST, RUST SCALE, PAINT, AND FOREIGN MATTER BY THE USE OF ABRASIVES PROPELLED THROUGH NOZZLES OR BY CENTRIFUGAL WHEELS.

White blast clean _____. Accomplish the requirements of Surface Preparation Specification SSPC-SP-5 of 2.____.

B5d

NOTE: COMMERCIAL BLAST CLEANING SPECIFICATION COVERS THE PROCEDURE AND DEGREE OF CLEANLINESS REQUIRED FOR THE REMOVAL OF MILL SCALE, RUST, RUST SCALE, PAINT, AND FOREIGN MATTER BY THE USE OF ABRASIVES PROPELLED THROUGH NOZZLES OR BY CENTRIFUGAL WHEELS TO THE EXTENT THAT TWO-THIRDS OF EACH SQUARE INCH OF SURFACE AREA SHALL BE FREE OF VISIBLE RESIDUES AND THE REMAINDER SHALL BE LIMITED TO LIGHT DISCOLORATION, SLIGHT STAINING OR TIGHT RESIDUES.

Commercial blast clean _____. Accomplish the requirements of Surface Preparation Specification SSPC-SP-6 of 2.____.

B5e

NOTE: BRUSH-OFF BLAST CLEANING SPECIFICATION COVERS THE PROCEDURE AND DEGREE OF CLEANLINESS REQUIRED FOR THE REMOVAL OF LOOSE MILL SCALE, LOOSE RUST, AND LOOSE PAINT OR COATINGS BY THE USE OF ABRASIVES PROPELLED THROUGH NOZZLES OR BY CENTRIFUGAL WHEELS TO THE EXTENT THAT TIGHT MILL SCALE, TIGHTLY ADHERED RUST, TIGHTLY ADHERED PAINT, AND TIGHTLY ADHERED COATINGS ARE PERMITTED TO REMAIN.

Brush-off blast clean _____. Accomplish the requirements of Surface Preparation Specification SSPC-SP-7 of 2.____.

B5f

NOTE: NEAR-WHITE BLAST CLEANING SPECIFICATION COVERS THE PROCEDURE AND DEGREE OF CLEANLINESS REQUIRED FOR THE REMOVAL OF MILL SCALE, RUST, CORROSION PRODUCTS, OXIDES, PAINT, OR OTHER FOREIGN MATTER BY THE USE OF ABRASIVES PROPELLED THROUGH NOZZLES OR BY CENTRIFUGAL WHEELS TO THE EXTENT AT LEAST 95 PERCENT OF EACH SQUARE INCH OF SURFACE AREA SHALL BE FREE OF VISIBLE RESIDUES AND THE REMAINDER SHALL BE LIMITED TO VERY LIGHT SHADOWS, VERY SLIGHT STREAKS, OR SLIGHT DISCOLORATIONS CAUSED BY RUST STAIN, MILL SCALE OXIDES, OR SLIGHT, TIGHT RESIDUES OF PAINT OR COATING THAT MAY REMAIN.

Near-white blast clean _____. Accomplish the requirements of Surface Preparation Specification SSPC-SP-10 of 2.____.

B5g

NOTE: POWER TOOL CLEANING SPECIFICATION COVERS THE PROCEDURE AND DEGREE OF CLEANLINESS REQUIRED FOR THE REMOVAL OF RUST, MILL SCALE, PAINT, AND FOREIGN MATTER WITH POWER WIRE BRUSHES, POWER IMPACT TOOLS, POWER GRINDERS, POWER SANDERS, OR BY A COMBINATION OF THESE METHODS.

Power tool clean to bare metal _____. Accomplish the requirements of Surface Preparation Specification SSPC-SP-11 of 2.____.

B5h

Clean exposed parts free of _____, leaving no residue or injurious effects.

B6

Remove bent and broken fasteners and restore damaged internal threaded parts to original dimensions by welding, drilling, and tapping, or by the installation of threaded inserts.

B7

Install new label plates in accordance with 2.____, using 2.____ for guidance.

B13a

Label plates shall conform to MIL-DTL-15024, Type _____, Material _____, Color _____, and Size _____.

B13b

NOTE: PLANNER IS REQUIRED TO RESEARCH AND PROVIDE PERTINENT DATA IN NOTES SECTION OF WORK ITEM.

Reference 2.__ is available from _____. For a copy of this reference, contact _____.

B14

NOTE: WHEN NO HARD COPY IS REQUIRED, THE WORDS "HARD COPY OR" SHALL BE DELETED (B15a - B15f).

Submit one legible copy, in hard copy or electronic media, of a report listing results of the requirements of ____ to the SUPERVISOR.

B15a

NOTE: USE B15b WHEN REPORT IS REQUIRED BY A CERTAIN DATE FOR EFFECTIVE AVAILABILITY MANAGEMENT.

Submit one legible copy, in hard copy or electronic media, of a report listing results of the requirements of ____ to the SUPERVISOR within ____ days of ____.

B15b

Submit one legible copy, in hard copy or electronic media, of a report listing ____ to the SUPERVISOR.

B15c

Submit one legible copy, in hard copy or electronic media, of completed ____ to the SUPERVISOR.

B15d

Submit one legible copy, in hard copy or electronic media, of completed 2.__ for each ____ and a report listing results of the requirements of 3.__ to the SUPERVISOR.

B15e

NOTE: USE B15f WHEN A WORK ITEM REQUIRES THE SUBMISSION OF A REPORT, AND THE WORK HAS TO BE COMPLETED AND THE DATA IN THE HANDS OF THE NSA FOR REVIEW AND APPROVAL PRIOR TO THE UNDOCKING OF THE VESSEL.

Submit one legible copy, in hard copy or electronic media, of a report listing results of the requirements of ____ to the SUPERVISOR within 24 hours after recording the data but no later than 72 hours prior to undocking.

B15f

NOTE: B17b SHALL BE A SUBPARAGRAPH TO B17a.

FOR PACKING, CRATING, AND SHIPPING OF PROPULSION
EQUIPMENT, EITHER TURNAROUND OR REPLACEMENT, USE MIL-
DTL-2845, PROPULSION SYSTEMS, BOAT AND SHIP; MAIN
SHAFTING, PROPELLERS, BEARINGS, GAUGES, SPECIAL TOOLS,
AND ASSOCIATED REPAIR PARTS; PRESERVATION, PACKAGING,
PACKING AND STORAGE OF, AS A REFERENCE.

Crate and secure _____ removed in 3.____. Packaging shall conform to 2.____.

B17a

Ship crated material prepaid to and from: _____

B17b

NOTE: B17d SHALL BE A SUBPARAGRAPH TO B17c.

ON EQUIPMENT WHICH IS (GFM) APA MATERIAL, EITHER
TURNAROUND OR REPLACEMENT, USE SL460-AA-HBK-010,
HANDBOOK FOR INSPECTION, PACKAGING, HANDLING, STORAGE
AND TRANSPORTATION AS A REFERENCE WHEN B17c IS INVOKED,
FOR PACKING, CRATING, AND SHIPPING OF EQUIPMENT.

Crate and secure _____ removed in 3.____. Packaging shall conform to 2.____.

B17c

Ship crated material prepaid to and from: _____

B17d

Prior to packing and crating, visually inspect the removed equipment for general condition and completeness.

B17e

Ship the equipment to ensure arrival at the repair facility within ____ calendar days after availability start date.

B17f

NOTE: WHEN NO HARD COPY IS REQUIRED, THE WORDS "HARD COPY OR"
SHALL BE DELETED.

Submit one legible copy, in hard copy or electronic media, of the shipping document to the SUPERVISOR.

B17g

NOTE: B20b SHALL BE A SUBPARAGRAPH TO B20a.

ON EQUIPMENT WHICH IS NOT APA OR TURNAROUND, USE NAVSUP
PUB. 484, PACKAGING PROCEDURES, AS A REFERENCE WHEN
B20a IS INVOKED, FOR PACKING, CRATING, AND SHIPPING OF
EQUIPMENT THAT HAS A KNOWN NAVY VALUE.

Crate and secure ____ removed in 3.____. Packaging shall conform to 2.____.

B20a

Ship crated material to:

B20b

NOTE: B20d SHALL BE A SUBPARAGRAPH TO B20c.

ASTM D 6039/D 6039M APPLIES ONLY TO OPEN WOOD CRATES
FOR LOADS NOT EXCEEDING 4000 LBS.

Crate and secure ____ removed in 3.____, conforming to ASTM D 6039/D 6039M.

B20c

Ship crated material to _____.

B20d

Prior to packing and crating, visually inspect the removed equipment for general condition and completeness.

B20e

Ship the equipment within ____ calendar days after the availability start date.

B20f

NOTE: USE B20g FOR MATERIAL to BE TURNED OVER TO THE
SUPERVISOR.

Crate and secure the equipment listed in 1.3. Packing shall be equal to that used for the equipment provided by the Government. Crated equipment shall be turned in to the SUPERVISOR within 10 working days after removal.

B20g

Crate and ship _____ prepaid to and from the following _____ for _____:

B20i

NOTE: USE WHEN MAIN ITEM IS REMOVAL OF INSULATION AND LAGGING.

FOR REFERENCE USE S9086-VH-STM-020/CH-635, THERMAL, FIRE, AND ACOUSTIC INSULATION.

Remove and dispose of existing insulation and lagging from the systems and components listed in 1.3., using 2. for guidance.

B21

NOTE: B15a SHALL BE A SUBPARAGRAPH TO B22.

Accomplish a joint visual inspection with the SUPERVISOR of each ____ listed in ____ for structural integrity, deterioration, pitting, cracks, and areas of damage or distortion, and to determine required repairs.

B22

NOTE: B25b SHALL BE A SUBPARAGRAPH TO B25a.

USE B25a-B25b FOR ULTRASONIC OR RADIOGRAPHIC TESTS.
FOR REFERENCE USE T9074-AS-GIB-010/271, REQUIREMENTS FOR NONDESTRUCTIVE TESTING METHODS.

Accomplish ____ tests on ____ in accordance with 2. .

B25a

NOTE: WHEN NO HARD COPY IS REQUIRED, THE WORDS "HARD COPY OR" SHALL BE DELETED.

Submit one legible copy, in hard copy or electronic media, of a report listing results of the requirements of 3. to the SUPERVISOR.

B25b

NOTE: B26b SHALL BE A SUBPARAGRAPH TO B26a.

USE B26a-B26b FOR LIQUID PENETRANT OR MAGNETIC PARTICLE TESTS. FOR REFERENCE USE T9074-AS-GIB-010/271, REQUIREMENTS FOR NONDESTRUCTIVE TESTING METHODS AND MIL-STD-2035, NONDESTRUCTIVE TESTING ACCEPTANCE CRITERIA.

Accomplish ____ tests on ____ in accordance with 2.____. The accept or reject criteria shall be in accordance with Class ____ of 2.____.

B26a

NOTE: WHEN NO HARD COPY IS REQUIRED, THE WORDS "HARD COPY OR"
SHALL BE DELETED.

Submit one legible copy, in hard copy or electronic media, of a report listing results of the requirements of 3.____ to the SUPERVISOR.

B26b

Remove and dispose of ____ from the ____.

B27

Remove existing and install new ____.

B28

Install new fasteners conforming to MIL-DTL-1222, Grade 5, carbon steel, zinc plated for below deck areas and Type One, Grade 316, CRES for topside areas exposed to weather and salt spray.

B29

Remove existing, fit, and install new the following parts:

TOTAL				
QUANTITY	NAME	PIECE	REF.	FIGURE
REQUIRED	OF PART	NO.____	NO.____	DRAWING NO.
				PART NO.

B30

NOTE: B31 IS INTENDED FOR, BUT NOT LIMITED TO, MOUNTING RADIO
AND RADAR ANTENNAS TO THEIR FOUNDATIONS.

Install new mounting fasteners conforming to MIL-DTL-1222, Type I, Grade 304, CRES.

B31

Energize with ship's power and accomplish operational testing of the equipment installed in 3._ to ensure equipment functions to designed sequence of operation, in accordance with manufacturer's instructions supplied with equipment.

B33

Accomplish an operational test of _____ in accordance with 2.__.

B34a

Accomplish the requirements of 2.__ for each _____.

B34b

NOTE: B34d SHALL BE A SUBPARAGRAPH TO B34c.

Accomplish an operational test of the new equipment installed in 3.__ through each phase of operation for _____ continuous hours each, using manufacturer's instructions for guidance, and the following:

B34c

Verify conformance and operations capabilities in accordance with manufacturer's specifications.

B34d

NOTE: THIS SEGMENT SHALL ALWAYS BE USED ON PROGRAMMED TURNAROUND WORK ITEMS. CALENDAR DAYS ARE DERIVED BY COMPARISON BETWEEN EQUIPMENT TURNAROUND SCHEDULE AND ROH DATE SET BY TYCOM.

The estimated dockside delivery date of the _____ is _____ calendar days after start of availability.

B36

Accomplish the requirements of 2.__.

B37a

NOTE: PHRASE B37b IS INTENDED FOR, BUT NOT LIMITED TO, USE WHEN ACCOMPLISHING SHIPALTS.

Accomplish the requirements of 2.__ through 2.__, using 2.__ for guidance.

B37b

Remove equipment listed in 1.3, using 2.__ for guidance.

B38a

Remove equipment listed in 1.3 in accordance with 2.__.

B38b

Remove equipment listed in 1.3.____ through 1.3.____, using 2.____ for guidance.

B38c

Remove equipment listed in 1.3.____ through 1.3.____ in accordance with 2.____.

B38d

Remove equipment listed in 1.3.____, using 2.____ for guidance.

B38e

Remove equipment listed in 1.3.____ in accordance with 2.____.

B38f

Install equipment listed in 1.3.____ in accordance with 2.____.

B38g

Remove and dispose of system fluids from the equipment listed in ____.

B39

Obtain the services of a ____ engineer to provide engineering assistance to ____.

B40

Scrape and spot-in sealing surfaces to obtain a 360-degree continuous ____ percent evenly distributed contact with no leakage path extending from the pressure boundary to the atmospheric boundary.

B41

NOTE: ADD THE FOLLOWING VERBIAGE TO ALL WORK ITEMS INVOLVING
 INTERIOR AREAS OF VENTILATION SYSTEMS:

Consider materials, debris, and/or residue associated with ventilation systems to contain toxic/hazardous substances including but not limited to cadmium, chromium, and PCB's.

B42

NOTE: B43b SHALL BE A SUBPARAGRAPH TO B43a.

FOR REFERENCE USE S9086-T8-STM-010/CH-593, POLLUTION CONTROL.

Wear respiratory equipment, either a combination, full facepiece, pressure demand, supplied-air respirator (SAR), or a full facepiece, pressure demand, self-contained breathing apparatus (SCBA), until CHT spaces or tanks have been certified and a certificate issued.

B43a

Accomplish sanitary and hygienic procedures of Paragraph 593-4.3.3 through 593-4.3.4.1.3 of 2.____.

B43b

Disinfect equipment to accomplish work required by this Work Item, using Paragraph 593-4.3.3 of 2.____ for guidance.

B43c

NOTE: B44b-B44d SHALL BE SUBPARAGRAPHS TO B44a.

FOR REFERENCE USE S6430-AE-TED-010, VOLUME I, TECHNICAL DIRECTIVE FOR PIPING DEVICES, FLEXIBLE HOSE ASSEMBLIES

Remove existing and install new flexible hose assemblies. Template from existing shipboard conditions.

B44a

NOTE: *AN (I)(G) IS REQUIRED FOR TESTING FLEX HOSES.*

Each new hose assembly shall be in accordance with Section 7, conforming to material of Section 5 of 2.____.

B44b

Accomplish the requirements of Section 8 of 2.____.

B44c

Install a new CRES identification tag on each flexible hose assembly engraved in accordance with Paragraph 8.5 of 2.____.

B44d

Install new hose assemblies in accordance with Section 9 of 2.____.

B44e

NOTE: B15a SHALL BE A SUBPARAGRAPH TO B44f.

USE WHEN NEW FITTINGS ARE UNAVAILABLE.

Reuse existing flexible hose end fittings where found acceptable after inspection in accordance with Section 6, Paragraph 6.2 of 2.____.

B44f

NOTE: FOR REFERENCE, USE 803-1385866, PENETRATION BULKHEAD AND DECK.

Install new bulkhead and deck sleeves in accordance with 2.____.

B45

NOTE: B48b SHALL BE A SUBPARAGRAPH TO B48a.

FILL IN BLANK WITH DESIRED ACTION, e.g., ADDITIONAL REPAIRS, INSULATION AND LAGGING, INTERFERENCES, ETC. DOLLAR AMOUNTS SHALL BE WRITTEN WITH COMMA, e.g., 5,000.

Provide ____ mandays of labor and ____ dollars of material to accomplish _____ when directed by the SUPERVISOR. Total cost greater or less than above manday and dollar amounts when authorized will be the subject of an equitable adjustment.

B48a

NOTE: WHEN NO HARD COPY IS REQUIRED, THE WORDS "HARD COPY OR" SHALL BE DELETED (B48b and B48d).

Submit one legible copy, in hard copy or electronic media, of a weekly report to document labor and material expenditures to the SUPERVISOR.

B48b

NOTE: B48d SHALL BE A SUBPARAGRAPH TO B48c.

USE FOR GAS FREE CERTIFICATIONS OF ADJACENT TANKS OR SPACES OR PIPING SYSTEMS WHEN LOCATION OF REQUIRED HOT WORK CANNOT BE DETERMINED UNTIL COMPLETION OF PRELIMINARY AIR TEST AND VISUAL INSPECTION. DO NOT USE IF ADJACENT TANKS OR SPACES OR PIPING SYSTEMS ARE IDENTIFIED IN 1.2.

Provide ____ mandays of labor and _____ dollars of material to accomplish certifications ("Safe for Workers" and/or "Safe for Hot Work") of adjacent tanks, spaces, and piping systems when directed by the SUPERVISOR. Total cost greater or less than above manday and dollar amounts when authorized will be the subject of an equitable adjustment.

B48c

Submit one legible copy, in hard copy or electronic media, of a weekly report to document labor and material expenditures to the SUPERVISOR.

B48d

NOTE: USE B48d AS A SUBPARAGRAPH TO B48e AND B48f.

Provide ____ mandays of labor and ____ dollars of material to accomplish ____, as designated by the SUPERVISOR. Total cost greater or less than above manday and dollar amounts when authorized will be the subject of an equitable adjustment.

B48e

Provide ____ mandays of labor and ____ dollars of material to accomplish ____, when directed by the SUPERVISOR. Total cost greater or less than above manday and dollar amounts when authorized will be the subject of an equitable adjustment.

B48f

Install flush inserts in way of removals, using new material of same type and thickness as adjacent structures

B49

NOTE: B50 IS INTENDED FOR, BUT NOT LIMITED TO, USE AS A
SUBPARAGRAPH TO A13a, A14a, A16, A36, AND A75.

WHEN NO HARD COPY IS REQUIRED, THE WORDS "HARD COPY OR"
SHALL BE DELETED.

Submit one legible copy, in hard copy or electronic media, of a list of new parts installed, **excluding parts specifically identified to be replaced in this Work Item or invoked Standard Item**, in place of those found to be missing or defective, with documenting invoices or other substantiating data, to the SUPERVISOR. Total cost of new parts shall not exceed ____ dollars without prior approval of the SUPERVISOR. Total cost greater or less than above dollar amount will be the subject of an equitable adjustment.

B50

Accomplish additional repairs to tanks listed in 1.2, using the unused balance of per tank repairs listed in ____ through ____ when authorized by the SUPERVISOR.

B51

NOTE: FILL IN NUMBER OF TIMES CLIN IS NEEDED. USE B52a FOR
EQUIPMENT. USE B52b WHEN LOCATION AND IDENTIFICATION
ARE BOTH NEEDED.

Accomplish the requirements of CLIN ____ (== EA) for the equipment listed in 1.3._.

B52a

Accomplish the requirements of CLIN ____ (== EA) for the _____ listed in 1.3._, in location listed in 1.2. .

B52b

Accomplish the requirements of CLIN ____ (___ EA) for _____.

B52c

Accomplish the requirements of CLIN ____ (___ EA).

B52d

STANDARD PHRASEOLOGY

SECTION C

NOT USED

STANDARD PHRASEOLOGY

SECTION D

1. This section of standard phraseology is for use in structural disciplines.

Chip and grind surfaces flush in way of repairs.

D1

Remove existing and install new each watertight door and hatch listed in ____.

D2

Clean each tank listed in ____ free of debris and foreign matter.

D3a

Inspect each tank for cleanliness prior to final closing.

D3b

Accomplish a chalk test on each structural closure listed in _____. Chalk imprint shall be centered with 100 percent contact.

D4

Remove existing and install new each watertight hatch and coaming listed in ____.

D5

NOTE: UTILIZE FOR COMPARTMENTATION MARKINGS. FOR REFERENCE
USE FED-STD-595, COLORS.

Apply markings using applicable colors from the following list:

White, Color No. 17886 of 2.____, MIL-PRF-24635
Yellow, Color No. 13538 of 2.____, MIL-PRF-24635
Red, Color No. 11105 of 2.____, MIL-PRF-24635
Green, Color No. 14062 of 2.____, MIL-PRF-24635
Black, Color No. 17038 of 2.____, MIL-PRF-24635
Blue, Color No. 15200 of 2.____, MIL-PRF-24635

D8

Slush each new wire rope with new grease conforming to MIL-PRF-18458.

D10

Contact the SUPERVISOR to determine color, style, and pattern of habitability items.

D11a

Provide samples for color, style, and pattern selection.

D11b

Apply 2 layers of insulation tape, to a total minimum thickness of 17 mils, conforming to MIL-I-24391 to the faying surfaces of dissimilar metal.

D12

Remove unused clips, hangers, electrical buttons, and studs from overhead, bulkheads, and decks.

D13

Adjust each hinge, latch, and safety release, installing CRES shims to ensure an airtight seal for each door.

D14

Chip and grind surfaces flush and smooth in way of ____.

D15

Accomplish a visual inspection of each ____ for structural integrity, deterioration, pitting, cracks, and areas of damage or distortion in each location listed in 1.2.

D16a

Accomplish a visual inspection of each tank listed in 1.2 for existing preservation coating, structural integrity, deterioration, pitting, cracks, and areas of damage or distortion, including sounding tubes, tank vents, overflows, piping, structural members, and manhole covers.

D16b

Shop test each new wire rope, including attached end fittings, to 40 percent of the breaking strength of the wire rope.

D17

Remove existing and install new decorative sheathing systems on inside boundary bulkheads in accordance with 2.____, and details in 2.____, conforming to MIL-L-24518.

D18

Install temporary wooden closures over each opening caused by removals.

D21a

Remove each temporary closure upon completion of work.

D21b

Adjust each dogging mechanism for proper operation and to obtain 100 percent centered contact ***with the imprint of chalk in the center three-fifths of the gasket.***

D23

Vee-out and weld _____ linear feet of deteriorated and damaged welds. Area of repairs shall include deck, bulkhead, shell plating, and overhead of each space listed in 1.2 for total of _____ linear feet per space.

D24

Preserve the interior surfaces of each _____ with rust preventative compound conforming to MIL-PRF-16173, Class I or II, Grade 1 or 3, by completely filling and draining. Ventilate to remove solvent vapors.

D25

NOTE: FOR REFERENCE USE MIL-STD-1689, FABRICATION, WELDING, AND INSPECTION OF SHIP'S STRUCTURE.

Fair-in existing plating adjoining each new insert in accordance with 2.____.

D26

Changes and alternate routes shall be made to enable ventilation runs to be completed and to suit existing shipboard conditions when the dimensions used on 2.____ cannot be complied with.

D30a

NOTE: D30b IS OPTIONAL FOR THOSE ACTIVITIES WHO CAN ESTABLISH THAT THE CONTRACTOR CAN SHIPCHECK THE SHIP BEING REPAIRED PRIOR TO BID.

Relocate lights, fixtures, equipment, pipes, cables, and wiring in way of new ventilation installation. New ventilation shall be templated to suit existing shipboard conditions and offset around interferences not feasible to relocate.

D30b

NOTE: D31 IS INTENDED FOR, BUT NOT LIMITED TO, USE WHEN ACCOMPLISHING SHIPALTS.

Accomplish testing and balancing for systems installed new and only the modified portions of existing systems to ensure minimum delivery of designed air quantities in accordance with 2.____.

D31a

Accomplish testing and balancing for systems installed new and only the modified portions of existing systems to ensure delivery of not less than 100 percent nor more than 110 percent of design air quantity to each compartment served. Where there is more than one terminal in a compartment, air delivered at each terminal shall be within plus or minus 20 percent of design quantity.

D31b

Template exact size, configuration, and location from existing shipboard conditions.

D32

STANDARD PHRASEOLOGY

SECTION E

1. This section of standard phraseology is for general use in mechanical disciplines.

Disassemble each ____, using 2.___for guidance.

E1a

Disassemble each ____ in accordance with 2.___.

E1b

NOTE: USE AS A SUBPARAGRAPH WHEN DISASSEMBLY IS INVOKED.

Measure and record sizes and clearances of each ____, using 2.___ for guidance.

E4a

Measure and record sizes and clearances of each ____ in accordance with 2.___.

E4b

NOTE: USE FOR NONCRITICAL EQUIPMENT (GENERAL USE).

Include sizes and clearances for wearing parts, bearing surfaces, thrust and journal bearings, seal and packing areas, and physical conditions of parts not specified for renewal.

E4c

NOTE: USE FOR MISSION CRITICAL EQUIPMENT, ESPECIALLY FORCED
DRAFT BLOWERS, MAIN FEED PUMPS, MAIN PROPULSION
TURBINES, ETC.

Include sizes, clearances, fits, and finishes for wearing parts, bearing surfaces, thrust and journal bearings, seal and packing areas, and physical conditions of parts not specified for renewal.

E4d

NOTE: USE E5a AS A SUBPARAGRAPH WHEN DISASSEMBLY IS INVOKED.

Inspect each part for wear and defects, using 2.____ for guidance for accept or reject criteria.

E5a

Inspect each part for wear and defects, using 2.____ for accept or reject criteria.

E5b

Remove test fluid and dry the ____ interior and exterior surfaces. Allowable residual fluid: None.

E6

Straighten each ____ to within ____ inch total indicator reading.

E7

Straighten each shaft to within ____ inch total indicator reading.

E8

Straighten operating levers, linkages, and eccentrics to provide freedom of operation.

E9

NOTE: FOR REFERENCE USE DOD-STD-2182, ENGINEERING CHROMIUM PLATING (ELECTRODEPOSITED) FOR REPAIR OF SHAFTING (METRIC). FOR NDT TESTING, USE B26a-B26b .

Chrome-plate each ____ journal in accordance with 2.____.

E10

Machine each ____, using 2.____ for guidance.

E11a

Machine each ____ in accordance with 2.____.

E11b

Machine each new undersize casing wearing ring and each new oversize impeller wearing ring to sizes specified in 2.__.

E12a

NOTE: USE E12b-E12c FOR IMPELLERS WITHOUT WEARING RINGS.

Machine each new impeller wearing ring area concentric to the impeller bore within 0.001-inch total indicator reading, removing only material required to correct out-of-round and eccentric conditions.

E12b

Machine each new undersize casing wearing ring bore concentric to casing wearing ring area to sizes specified in 2.__ for the mating impeller wearing surfaces.

E12c

NOTE: USE E12d-E12e FOR IMPELLERS WITH OVERSIZED WEARING RINGS.

Machine each new impeller wearing ring concentric to the impeller bore within 0.001 inch total indicator reading, removing only material required to correct out-of-round and eccentric conditions.

E12d

Machine each new casing wearing ring bore concentric to casing wearing ring area to sizes specified in 2.__ for the mating impeller wearing ring surfaces.

E12e

Machine each new impeller wearing ring, using 2.__ for guidance.

E13a

Machine each new impeller wearing ring in accordance with 2.__.

E13b

Machine each new casing wearing ring, using 2.__ for guidance.

E14a

Machine each new casing wearing ring in accordance with 2.____.

E14b

Fit each wearing ring to corresponding groove in upper and lower casings.

E15

Inspect wearing ring fit. Rings shall not bind and clearance shall be in accordance with 2.____.

E16

Stone both faces of each thrust collar to remove high spots.

E17

Stone each ____ journal to remove high spots.

E18

Stone each pinion and gear tooth to remove high spots.

E19

NOTE: WHEN E20 IS USED, E21 SHALL ALWAYS BE A SUBPARAGRAPH.
 SPECIFY LABYRINTH OR CARBON PACKING.

Scrape, lap, and fit metal-to-metal joints of each turbine packing box, turbine case, turbine case cover, nozzle, steam chest, steam strainer, and steam strainer cover.

E20a

Lap and fit metal-to-metal joints of each ____.

E20b

Hand fit and restore the contact between exposed metal-to-metal, steamtight joints.

E20c

Machine, hand fit, and restore the contact between exposed metal-to-metal, steamtight joints.

E20d

Machine, hand fit, and restore the contact between exposed metal-to-metal and gasket seating surfaces, using 2.___ for guidance.

E20e

Inspect contact using blueing **transfer** method. Contact shall be ___ percent, with a continuous band of contact ___ wide between inner bolting perimeter and the sealing surface pressure source.

E21a

Inspect contact using blueing **transfer** method. Contact shall be a minimum of ___ percent of total surface area, including a minimum of ___ percent continuous contact across the pressure sealing surfaces.

E21b

Inspect contact using blueing **transfer** method. Contact shall be a minimum of ___ percent of total surface area, including a continuous band with a minimum width of ___ percent of the distance from the pressure source to the inner bolting perimeter.

E21c

NOTE: FOR PUMPS WITH IMPELLER WEARING RINGS.

Inspect each assembled pump rotating assembly for concentricity to the shaft axis. Eccentricity at each bearing shaft sleeve and wearing ring mating area shall not exceed ___ inch total indicator reading.

E22

NOTE: USE FOR MINOR REPAIRS.

Restore mating surfaces exposed by ___ removal. Repair by removing high spots, burrs, abrasions, and foreign matter, where removal can be accomplished by hand tools.

E23a

Remove high spots, burrs, abrasions, nicks, corrosion, gasket material, and foreign matter from exposed flanges and mating surfaces.

E23b

Remove burrs and high spots from exposed sliding surfaces, screw threads, keys, and keyways.

E23c

Assemble each ____, using 2.__ for guidance.

E24a

Assemble each ____ in accordance with 2.__.

E24b

Assemble, install, align, adjust, and connect ____, fitting and installing new ____ and the following new parts in accordance with 2.__:

E24c

Measure and record final sizes and clearances, using 2.__ for guidance.

E25a

Measure and record final sizes and clearances in accordance with 2.__.

E25b

Adjust and set the height of each worm gear, using 2.__ for guidance.

E26a

Adjust and set the height of each worm gear in accordance with 2.__.

E26b

Verify mesh alignment and contact, using blueing method.

E26d

Thrust faces shall be square with shaft axis to within ____ inch total indicator reading.

E27

NOTE: FOR USE OF PRE-ESTABLISHED PARTS LIST FROM A TECHNICAL
MANUAL OR OTHER REFERENCE.

Remove existing and install new gaskets, o-rings, pins, keys, studs, bolts, and nuts. Material shall conform to specifications in ____ of 2.____.

E28

Manually rotate each shaft prior to installation of pump shaft packing. Rubbing or binding of the rotating assembly not allowed.

E30a

Rotate shaft by hand one complete revolution. Binding or rubbing of the rotating assembly is not allowed.

E30b

NOTE: USE E31 AS A SUBPARAGRAPH WHEN SECURING DETAILS ARE
INVOKED.

Apply antiseize compound conforming to MIL-PRF-907 on high temperature fasteners.

E31

NOTE: FOR TURBINE SEALING SURFACES.

Apply triple boiled linseed oil conforming to ____, with a viscosity of Z-8 or Z-9 on metal-to-metal steam joints.

E32a

Apply high temperature sealing compound conforming to MIL-S-15204, Type C, on each ____.

E32b

NOTE: FOR REDUCTION GEAR, BEARING AND COUPLING COVERS.

Apply sealant conforming to MIL-S-45180, Type 2, on the metal-to-metal joints of each ____.

E33

NOTE: FOR STEAM AND STEAM DRAINS (50-100 PSIG - 425 DEGREES FAHRENHEIT).

Remove existing and install new steam piping joint gaskets and fasteners. Gaskets shall conform to Graph Lock 3125SS/Graftech sheet gasket. Fasteners **and nuts** shall conform to MIL-DTL-1222, Type I, Grade 400 or 405, Class A or B, QQ-N-281, nickel-copper alloy.

E34

NOTE: FOR STEAM AND STEAM DRAINS 600-1500 PSIG, 1000 DEGREES FAHRENHEIT (MAXIMUM).

Remove existing and install new steam piping joint gaskets and fasteners. Gaskets shall conform to MIL-G-24716. Fasteners shall conform to MIL-DTL-1222, Grade B16, alloy steel. Nuts shall conform to MIL-DTL-1222, Type I, Grade 7.

E35

NOTE: FOR STEAM AND STEAM DRAINS 150-1500 PSIG, 775 DEGREES FAHRENHEIT (MAXIMUM).

Remove existing and install new steam piping joint gaskets and fasteners. Gaskets shall conform to MIL-G-24716. Fasteners shall conform to MIL-DTL-1222, Type IV, Grade B-7, alloy steel. Nuts shall conform to MIL-DTL-1222, Type I, Grade 4.

E36

NOTE: FOR PROPULSION PLANT SATURATED FEED SYSTEM 600-2050 PSIG, 300 DEGREES FAHRENHEIT (MAXIMUM).

Remove existing and install new feedwater piping joint gaskets and fasteners. Gaskets shall conform to MIL-G-24716. Fasteners shall conform to MIL-DTL-1222, Type I, Grade 5, carbon steel. Nuts shall conform to MIL-DTL-1222, Type I, Grade 5, alloy steel.

E37

NOTE: FOR FRESH WATER - CHILLED WATER, FEEDWATER AND CONDENSATE 100 PSIG, 250 DEGREES FAHRENHEIT (MAXIMUM), i.e., HH-P-151, CLASS I, CLOTH INSERTED RUBBER, MIL-PRF-1149, TYPE II, CLASS I, SYNTHETIC RUBBER.

Remove existing and install new fresh water piping joint gaskets and fasteners. Gaskets shall conform to ___, ___, ___. Fasteners and nuts shall conform to MIL-DTL-1222, Type I, Grade 400 or 405, Class A or B, QQ-N-281, nickel-copper alloy.

E39

NOTE: FOR SALT WATER, INCLUDING SUCTION SEA CHEST STEAM OUT CONNECTIONS, 50-250 PSIG, 150 DEGREES FAHRENHEIT (MAXIMUM).

Remove existing and install new salt water piping joint gaskets and fasteners. Gaskets shall conform to HH-P-151, Class I, cloth inserted rubber, or MIL-PRF-1149, Type II, Class I, synthetic rubber. Fasteners and nuts shall conform to MIL-DTL-1222, Type I, Grade 400 or 405, Class A or B, QQ-N-281, nickel-copper alloy.

E40

NOTE: FOR SALT WATER 50-250 PSIG, 150 DEGREES FAHRENHEIT (MAXIMUM).

Remove existing and install new salt water piping joint gaskets and fasteners. Gaskets shall conform to MIL-PRF-1149, Type I, Class I, synthetic rubber. Fasteners and nuts shall conform to MIL-DTL-1222, Type I, Grade 400 or 405, Class A or B, QQ-N-281, nickel-copper alloy.

E41

NOTE: FOR FUEL OIL 600-1200 PSIG, 775 DEGREES FAHRENHEIT (MAXIMUM).

Remove existing and install new fuel oil piping joint gaskets and fasteners. Gaskets shall conform to MIL-G-24716. Fasteners shall conform to MIL-DTL-1222, Type IV, Grade B-7, alloy steel. Nuts shall conform to MIL-DTL-1222, Grade 5. |

E42

NOTE: FOR DIESEL FUEL OIL 200 PSIG.

Remove existing and install new fuel oil piping joint gaskets and fasteners. Gaskets shall conform to MIL-G-24716. Fasteners and nuts shall conform to MIL-DTL-1222, Grade 5, carbon steel. Fasteners shall have protective coating per **MIL-DTL-83488 (aluminum coating)**, Type II, Class 3; or ASTM B 633 (**electrodeposited zinc**), Type II, **Service Condition 3**.

E43a

NOTE: FOR GAS TURBINE POWERED SHIPS FUEL OIL 200 PSIG, 150 DEGREES FAHRENHEIT (MAXIMUM).

Remove existing and install new fuel oil piping joint gaskets and fasteners. Gaskets shall conform to MIL-G-24716. Fasteners and nuts shall conform to MIL-DTL-1222, Type I, Grade 400 or 405, Class A or B, QQ-N-281, nickel-copper alloy.

E43b

NOTE: FOR LUBRICATING OIL 50 PSIG, 180 DEGREES FAHRENHEIT (MAXIMUM) i.e., HH-P-151, CLASS I, CLOTH INSERTED RUBBER, MIL-PRF-1149, TYPE II, CLASS I, SYNTHETIC RUBBER.

Remove existing and install new lubricating oil piping joint gaskets and fasteners. Gaskets shall conform to ___, ___, ___. Fasteners and nuts shall conform to MIL-DTL-1222, Type I, Grade 2 **or Grade 5**, carbon steel. **Fasteners shall have protective coating per MIL-DTL-83488 (aluminum coating), Type II, Class 3; or ASTM B 633 (electrodeposited zinc), Type II, Service Condition 3.**

E44

NOTE: FOR LUBRICATING OIL 150 PSIG, 250 DEGREES FAHRENHEIT (MAXIMUM).

Remove existing and install new lubricating oil piping joint gaskets and fasteners. Gaskets shall conform to MIL-G-24716. Fasteners and nuts shall conform to MIL-DTL-1222, Type I, Grade 5, carbon steel. **Fasteners shall have protective coating per MIL-DTL-83488 (aluminum coating), Type II, Class 3; or ASTM B 633 (electrodeposited zinc), Type II, Service Condition 3.**

E45

NOTE: FOR INSTALLATION OF NEW HOLD-DOWN BOLTING FOR MACHINERY WHERE SELF-LOCKING NUTS ARE NOT REQUIRED.

Remove existing and install new hold-down bolts and nuts conforming to MIL-DTL-1222, Type III, Grade 5, alloy steel. Fasteners shall have protective coating per MIL-DTL-83488 (aluminum coating), Type II, Class 2, or ASTM B 633 (electrodeposited zinc), Type II, Service Condition 3.

E46

NOTE: FOR INSTALLATION OF NEW HOLD-DOWN BOLTING FOR MACHINERY WHERE SELF-LOCKING NUTS ARE REQUIRED. IDENTIFY TYPE OF MATERIAL FOR SELF-LOCKING NUTS.

Remove existing and install new hold-down bolts conforming to MIL-DTL-1222, Type III, Grade 5, and self-locking nuts conforming to NASM-25027, ___. Fasteners shall have protective coating per MIL-DTL-83488 (aluminum coating), Type II, Class 2, or ASTM B 633 (electrodeposited zinc), Type II, Service Condition 3.

E47

Install new aluminized cloth spray shields on ___ piping and valve flanges and components in accordance with ASTM F 1138.

E48

Fill each ____ to the full mark with new ____ conforming to ____.

E49

Allowable leakage at new and disturbed joints: None.

E50

NOTE: NICKEL COPPER ALUMINUM (K-MONEL) BOLTING OF SEA VALVES AND PIPE JOINTS - SHALL BE USED ON INBOARD AND OUTBOARD FLANGES AND BONNET JOINTS WHERE INTEGRITY OF THE HULL AGAINST THE SEA IS CONCERNED; ALSO WHERE VALVES ARE NOT READILY ACCESSIBLE FOR INSPECTION OR MAINTENANCE, i.e., HH-P-46, CLASS I, COMPRESSED ASBESTOS, MIL-G-24716, GASKET, METALLIC-FLEXIBLE GRAPHITE, SPIRAL WOUND OR ASME B16.20.

SELF-LOCKING NUTS SHALL NOT BE USED ON BOILER BLOWDOWN AND DISCHARGE PIPING.

Remove existing and install new gaskets and fasteners. Gaskets shall conform to ____, ____, ____. Fasteners shall conform to MIL-DTL-1222, Type I, Grade 500 nickel copper aluminum alloy.

E51

NOTE: INVOKE APPLICABLE 009-12 REQUIREMENTS.

Weld build-up the cracked, worn, and eroded areas of each ____ and machine to original dimensions and contours in accordance with 2.____.

E52a

Weld build-up the cracked, worn, and eroded areas of each ____ and machine to original dimensions and contours, using 2.____ for guidance.

E52b

Handwork and skim cut machined, sealing, aligning, mating, and gasket surfaces.

E53

NOTE: SPECIFY TYPE OF MATERIAL AND MIL-SPEC.

Install and fit new chocks and shims conforming to ____ to accomplish alignment.

E55a

NOTE: FOR PUMPS AND TURBINES, SHIMS SHALL CONFORM TO SAE-AMS-QQ-S-763, CRES, GRADE 304.

Install and fit new shims conforming to ____ to accomplish alignment.

E55b

Drill and ream **equipment support feet and** foundations. Fit and install new **tapered** dowels.

E56a

NOTE: SPECIFY TYPE OF MATERIAL.

Drill and ream **equipment support feet and** foundations. Fit and install new ____ **tapered** dowels in each unit to retain unit alignment.

E56b

NOTE: TO MINIMIZE THE POSSIBILITY OF STRAINER BAG RUPTURE, THE USE OF NYLON VICE MUSLIN FILTER BAGS (BECAUSE OF THEIR GREATER STRENGTH) IS RECOMMENDED.

Install new nylon filter bags in each strainer. Filter bags shall be of continuous filament nylon cloth, scoured finish, 80 by 80 thread, 75 to 100 micron fiber thickness, 125 to 200 micron holes in cloth.

E59a

NOTE: FOR USE IN LUBE OIL SYSTEMS WHERE RUPTURE OF FILTER BAG IS NOT PROBABLE.

Install new cotton muslin filter bags with material conforming to CCC-C-432, Type 7, Class One, in each strainer.

E59b

Chase and tap exposed threaded areas.

E62

Install new coupling assembly and keys on each ____.

E64a

Bore each coupling hub concentric and to size of shaft diameter within 0.001 inch total indicator reading and perpendicular to the face within 0.001 inch.

E64b

Cut keyways in each new coupling and fit new keys to the mating shafts and coupling hubs.

E64c

Align each coupling concentric to within ____ inch total indicator reading and parallel to within ____ inch gaged at the major diameter of the coupling face.

E64d

Inspect each bearing stave prior to installation aboard ship by probing with a pen knife or similar device at the rubber-metal interface around the total periphery of the stave to locate any unbonding of rubber from metal. A total cumulative length of unbonding greater than one inch, or any unbonding of any length allowing the knife blade to be inserted deeper than one-fourth inch, shall be cause for rejecting the stave.

E65

Measure crankshaft deflection in accordance with 2.____.

E66

Machine each brake drum a minimum amount to remove scoring, pitting, and eccentricity. Each drum shall be concentric to the drum bore within ____ inch total indicator reading.

E67

Clean each sump free of foreign material.

E68

Hone each ____ to remove glazing, scoring, and ridging.

E69

NOTE: USE THE FOLLOWING WHEN CLEANING STEAM TURBINE
INTERNALS, i.e., ROTORS, BLADING, CASING INTERNAL
SURFACES.

Blast clean each ____ with non-erosive cleaning agent.

E72a

Cleaning agent shall be aluminum oxide with a particle size no coarser than 220 grit. Other cleaning agents such as glass beads, ash, and walnut shells are acceptable provided that the resultant finish is equivalent to that provided by 220 grit or finer aluminum oxide. The use of sand is prohibited.

E72b

Protect each machined surface against the action of the cleaning agent.

E72c

Measure runout of each ____ shaft using dial indicator.

E73

Assemble each pump rotating assembly, using 2.____ for guidance.

E74

Clear each gage line and fitting free of foreign matter and obstructions.

E75

NOTE: FOR USE WITH A13 AND F40 WHEN LOA/PEB RELATED.

Calibration shall be accomplished within ____ days preceding the scheduled LOA lock-out date.

E77

Install new hold-down bolts and nuts conforming to MIL-DTL-1222, Type ____, Grade ____, and steel self-locking hexagon nuts conforming to NASM-25027.

E78

NOTE: FOR REFERENCE USE DOD-STD-2188, BABBITTING OF BEARING SHELLS (METRIC) AND DOD STD-2183, BOND TESTING, BABBIT LINED BEARINGS.

Rebabbitt each ____ bearing in accordance with 2.____.

E79a

Cast each bearing.

E79b

Machine each bearing ____.

E79c

Accomplish ultrasonic testing of each bearing in accordance with 2.____.

E79d

Polish each ____ to a ____ root mean square average for roughness.

E82

Align each motor and compressor pulley to within ____ inch parallel alignment. Belts shall depress ____ inch at a point midway between the pulleys.

E83

Inert system with a positive pressure of 2 PSIG, using dry, oil-free nitrogen and a nitrogen regulator.

E84a

Install relief valve downstream of nitrogen regulator and set at 5 PSIG.

E84b

NOTE: SPECIFY TYPE OF MATERIAL.

Drill and ream **equipment support feet and** foundations. Fit and install new ____ **tapered** dowels in each unit. The dowels shall be located in accessible locations for ease of removal that will retain unit alignment.

E86

Clear and clean pockets and passages free of obstructions and foreign matter.

E87

Test each remote valve operator assembly for ease of operation and proper alignment by opening and closing each valve from its remote operating station through 3 complete cycles. Allowable binding: None.

E88

NOTE: FOR USE ON NON-PRESSURE BOUNDARY APPLICATIONS SUCH AS
COUPLING TAPER FITS, SPOTTING IN FOUNDATION LINERS, OR
OTHER GENERAL APPLICATIONS WHERE BLUE CHECK IS
APPROPRIATE.

Inspect contact between ____ and ____ using the blueing **transfer** method. Contact shall be a minimum of ____ percent, evenly distributed over the contact surfaces.

E89

STANDARD PHRASEOLOGY

SECTION F

1. This section of standard phraseology is for general use in electronic and electrical disciplines.

Disconnect electrically and mechanically and remove equipment listed in 1.3.__. Record electrical hook-up data, using 2.__ for guidance.

F1

Matchmark, identify, and retain __.

F2

Accomplish an operational test of equipment and circuits.

F6

NOTE: FOR REFERENCE IN F8 AND F9, USE SE000-01-IMB-010, NAVY
INSTALLATION AND MAINTENANCE BOOK (NIMB), SECTION IX,
INSTALLATION STANDARDS (SOURCE CD: N0002400003).

Accomplish Swept Voltage Standing Wave Ration (VSWR) test on __ in accordance with Paragraph 5-2.11 of 2.__. Test shall be accomplished over the frequency range of equipment being tested.

F8a

Use standard VSWR reference loads at several points (i.e., 1.1:1, 1.25:1, 1.5:1, 2.1 and 3:1) to establish reference lines from lower to upper frequency limits.

F8b

Accomplish Insertion Loss test on __ in accordance with Paragraph 5-2.11 of 2.__. Tests shall be accomplished over frequency range of equipment being tested.

F9

NOTE: FOR REFERENCE USE 0967-LP-000-0130, ELECTRONICS
INSTALLATION AND MAINTENANCE BOOK, TEST METHODS AND
PRACTICES.

Accomplish Time Domain Reflectometer (TDR) test on ____ in accordance with Paragraph 5-7 of 2.____. Terminate each coaxial cable within its characteristic impedance and coefficient (RHO) control at maximum sensitivity. Record results on an X-Y recorder.

F10

Visually inspect components prior to cleaning to detect evidence of casualties or deteriorating conditions that may not be apparent after cleaning.

F11

Inspect and test component parts and circuitry for shorts, opens, and grounds and determine missing and defective component parts and circuitry in accordance with 2.____.

F12

Remove existing and install new wiring and component parts, using 2.____ for guidance.

F13

Install Field Change _____. Accomplish the requirements of 2.____.

F14

NOTE: USE FOR REPLACE WITH NEW, INSTALL OR REINSTALL -
EQUIPMENT.

Install equipment listed in 1.3.____. Install retained hardware of 3.____ and new CRES fasteners conforming to MIL-DTL-1222, Type I, Grade 304, using 2.____ for guidance. Connect equipment using recorded hook-up data and in accordance with 2.____.

F15a

NOTE: KNOWN TO BE A REQUIREMENT ON CG-47 CLASS.

Install equipment listed in 1.3.____. Install retained hardware of 3.____ and new CRES fasteners conforming to MIL-DTL-1222, Type I, Grade 316, using 2.____ for guidance. Connect equipment using recorded hook-up data and in accordance with 2.____.

F15b

NOTE: FOR REFERENCE USE MIL-STD-1310, SHIPBOARD BONDING, GROUNDING, AND OTHER TECHNIQUES FOR ELECTROMAGNETIC COMPATIBILITY AND SAFETY.

BOND STRAP FABRICATION AND INSTALLATION SHALL BE IN ACCORDANCE WITH SECTIONS 7 AND 8 OF SE000-01-IMB-010, NAVY INSTALLATION AND MAINTENANCE BOOK (NIMB), SECTION VII, INDUSTRIAL ELECTROMAGNETIC COMPATIBILITY (IEMC) WORK PROCESS INSTRUCTIONS (SOURCE CD: N0002400003), INDUSTRIAL ELECTROMAGNETIC COMPATIBILITY (IEMC) WORK PROCESS INSTRUCTIONS.

Bond and ground equipment in accordance with 2.__. Grounding straps shall be CRES 316L for topside equipment.

F16a

NOTE: FOR REFERENCE USE (10001) OD 32382, GROUNDING AND BONDING EQUIPMENT ENCL. CHASSIS AND CASES, DESIGN AND INSTALLATION.

Bond and ground equipment in accordance with 2.__ and 2.__.

F16b

Acceptable criteria for equipment to hull ground via bond or ground strap is one-tenth ohm maximum.

F17

Remove existing and install new lugs conforming to MIL-T-16366.

F18

Remove existing and install new conductor identification sleeving conforming to SAE-AMS-DTL-23053, Class I, white, marked with indelible ink.

F19

NOTE: FOR REFERENCE IN F22-F24, USE SE000-01-IMB-010, NAVY INSTALLATION AND MAINTENANCE BOOK (NIMB), SECTION IX, INSTALLATION STANDARDS (SOURCE CD: N0002400003).

Maintain temporary pressurization of __ in accordance with Paragraph 5-2.7.1 of 2.__ upon completion of Insertion Loss Test.

F22

Purge and pressurize ___ in accordance with Paragraph 5-1.14 of 2.___ upon completion of ___ installation.

F23

Blank ___ during unattended periods and maintain pressurization in accordance with Paragraph 5-2.6.6 of 2.___.

F24

NOTE: USE F26a-F26c AND F28a-F28b FOR POST-REPAIR TEST.

Accomplish Performance Tests of 2.___. Align and adjust within the tolerances specified therein.

F26a

Record readings on performance summary sheets.

F26b

NOTE: WHEN NO HARD COPY IS REQUIRED, THE WORDS "HARD COPY OR"
SHALL BE DELETED.

Submit one legible copy, in hard copy or electronic media, of completed summary sheets to the SUPERVISOR.

F26c

Accomplish an operational test of ship's service dial telephone installation. Accomplish adjustments to verify operational performance within performance tolerance of 2.___.

F28a

Verify circuits for audio output, clarity of voice transmission, and correct phone numbers.

F28b

Measure insulation resistance to ground for each stationary field winding and rotating field winding using a 500 volt direct current megger. Do not apply high voltages through solid state devices.

F29

Accomplish maintenance/reference standards test and record measurements of equipment listed in 1.__ in accordance with 2.__. Calibrate, test, and adjust the equipment and verify the performance of the equipment is within tolerances, using regulated power within the limits specified in 2.__.

F30a

Install and connect equipment aboard ship prior to maintenance/reference standards test.

F30b

Remove unused foundation(s), cable hanger(s), wireway(s), bracket(s), and stud(s). Chip and grind surfaces flush and smooth in way of removals.

F35

Install new foundations and studs for __. Template from new equipment. Install equipment at original location.

F36

Install and connect __, installing new fasteners conforming to MIL-DTL-1222, Type I or II, Grade 5, zinc coated.

F37a

Install and connect __, installing new CRES fasteners conforming to MIL-DTL-1222, Type I, Grade 304.

F37b

Silver plate __ in accordance with ASTM B 700.

F38

STANDARD PHRASEOLOGY

SECTION G

1. This section of standard phraseology is for general use in piping disciplines.

Hydrostatically test ____, using ____ at ____ PSIG for a minimum of ____ minutes. Allowable leakage: None.

G1

NOTE: USE ASTM F993, OR 810-5596087, SUPSHIP PORTSMOUTH STANDARD DRAWING VALVE LOCKING DEVICE (FOR CABLE LOCKING DEVICES, BUTTERFLY VALVES, AND LOCKED POSITION INDICATORS).

Install new locking devices on each valve listed in ____ in accordance with 2.____.

G2

NOTE: USE IN REPAIR OR SHIPALT WORK ITEMS FOR CLEANING NEW AND MODIFIED LEVEL II (AS DEFINED IN GSO SECTION 505j2) PIPING SYSTEMS WHICH DO NOT REQUIRE SPECIAL CLEANING REQUIREMENTS. REFER TO NOTE 1 IN GSO SECTION 505K2 FOR SYSTEMS REQUIRING SPECIAL CLEANING REQUIREMENTS.

Isolate components subject to damage and clean the new **and modified** ____ piping system to a cleanliness level that results in the internal surfaces being visually free of grease, oil, flux, scale, dirt, loose particles, and any other contamination foreign to the base metal. Tap water residues on metals and light superficial rust on carbon steel surfaces, caused by a short time exposure to the atmosphere, are permitted. Light dust on cleaned surfaces is not objectionable, provided that the quantity and size of the particle does not adversely affect system operation.

G3a

NOTE: USE FOR CLEANING NEW AND MODIFIED LEVEL III PIPING SYSTEMS.

Isolate components subject to damage and clean the new **and modified** ____ piping system to a cleanliness level that results in the internal system surfaces being cleaned free of contamination and any remaining residue on the surface does not interfere with the operation of or damage system components.

G3b

Restore piping flange mating surfaces exposed by disassembly of piping system. Repair by removing high spots, burrs, abrasions, and foreign matter, where removal can be accomplished by hand tools. Take precautions to maintain phonographic finish on flanges that have it.

G4

The copper-nickel piping shall be MIL-T-16420, Type ___, Class ___, ___-inch wall thickness.

G5a

The carbon steel piping shall be MIL-P-24691. |

G5b

The copper piping shall be MIL-T-24107, ___-inch wall thickness.

G5c

Purge, evacuate, and dehydrate ___ in accordance with 2.___. Charge with refrigerant ___ in accordance with 2.___.

G6

NOTE: FOR USE WITH 810-4714432 REF J, FOR PIPING HANGERS.

NNSY Standard Drawing, Std Pipe Hangers Fabrication Dets & Instl Instr (Non-Nuc Constr)

G7

Empty and clean ___, including piping associated with this Work Item.

G8

Align the piping to each ___. Piping shall be supported independently and shall not impose a strain.

G9a

Align the piping to each ___. Piping shall be supported independently and shall not impose a strain on the equipment.

G9b

NOTE: FOR REFERENCE USE 804-1385781, HANGERS, PIPE, FOR SURFACE SHIPS.

Install new hangers on new piping in accordance with 2.____.

G10a

Install new hangers to support the piping and prevent vibration in accordance with 2.____.

G10b

Accomplish a static head pressure test of ____ for ____ minutes. Allowable leakage: None.

G11

Accomplish tests in accordance with General Notes ____ of 2.____.

G12

MIL-STD-777, Schedule of Piping, Valves, Fittings, and Associated Piping components for Naval Surface Ships

G14a

802-5959353, MIL-STD-777D Modified for DDG-51 Class, Schedule of Piping, Valves, fittings, and Associated Piping Components

G14b

NOTE: FOR REFERENCE USE MIL-STD-777, SCHEDULE OF PIPING, VALVES, FITTINGS, AND ASSOCIATED PIPING COMPONENTS FOR NAVAL SURFACE SHIPS.

New materials shall conform to 2.____, including Category and Group ____.

G15

NOTE: ALLOWS PLANNER USE OF OTHER NAVSEA-APPROVED GASKETS AND FASTENERS NOT COVERED IN MIL-STD-777.

FOR BUTTERFLY VALVES INSTALLED IN SALTWATER SYSTEMS, USE GASKET MATERIAL CONFORMING TO MIL-**DTL**-24696 (FOR DDG-51 CLASS ONLY).

Install each valve, installing new gaskets conforming to ____ and new fasteners conforming to ____.

G16

NOTE: FOR REFERENCE USE MIL-STD-777, SCHEDULE OF PIPING, VALVES, FITTINGS, AND ASSOCIATED PIPING COMPONENTS FOR NAVAL SURFACE SHIPS.

Install each valve, installing new gaskets and fasteners conforming to 2.____, including Category and Group ____.

G17

Accomplish an operational test of the new and disturbed piping at ____ PSIG. Allowable external leakage: None.

G22

Accomplish an operational test on each newly installed valve at ____ PSIG.

G23a

Cycle each valve from full closed to full open to full closed 4 times. Allowable external leakage: None.

G23b

NOTE: FOR REFERENCE USE S9086-RK-STM-010/CH-505, PIPING SYSTEMS.

Measure and record alignment of expansion joint piping flanges in accordance with Paragraphs 505-3.3.1 through 3.3.6.5 of 2.____.

G24a

NOTE: WHEN NO HARD COPY IS REQUIRED, THE WORDS "HARD COPY OR" SHALL BE DELETED.

Submit one legible copy, in hard copy or electronic media, of a report listing measurements taken to the SUPERVISOR.

G24b

Nitrogen pressure test each brazed and mechanical joint at ____ PSIG for a minimum of 15 minutes.

G25a

Inspect each brazed and mechanical joint, using a soap bubble method.
Allowable leakage: None.

G25b

Machine each seat and disc to remove hardfacing.

G26a

Weld build-up each seat and disc.

G26b

Accomplish the requirements of 009-12 of 2.1, including Table One, Column C, Lines One through 9.

G26c

Machine each seat and disc to ____.

G26d

Accomplish nondestructive testing in accordance with Line ____.

G26e

Machine each seal ring seating area to remove stainless steel inlay.

G27a

Weld build-up each seal ring seating area.

G27b

Accomplish the requirements of 009-12 of 2.1, including Table One, Column H, Lines One through 9.

G27c

Machine each seal ring seating area to ____.

G27d

Accomplish nondestructive testing in accordance with Line ____.

G27e

NOTE: FOR REFERENCE USE MIL-STD-777, SCHEDULE OF PIPING,
 VALVES, FITTINGS, AND ASSOCIATED PIPING COMPONENTS FOR
 NAVAL SURFACE SHIPS.

Install new ____ valves in place of those removed in 3.____. New materials shall conform to 2.____, including Category and Group ____.

G28a

Shop test and set each relief valve prior to installation.

G28b

Test medium shall be ____.

G28c

Seat tightness shall be ____.

G28d

Lifting pressure shall be ____.

G28e

After setting each relief valve, install wire and leadlock seals and attach a metal tag to each valve stamped with the following information:

Ship name and hull number

Valve number or identification

Date valve tested and set

Name of repair facility

G28f